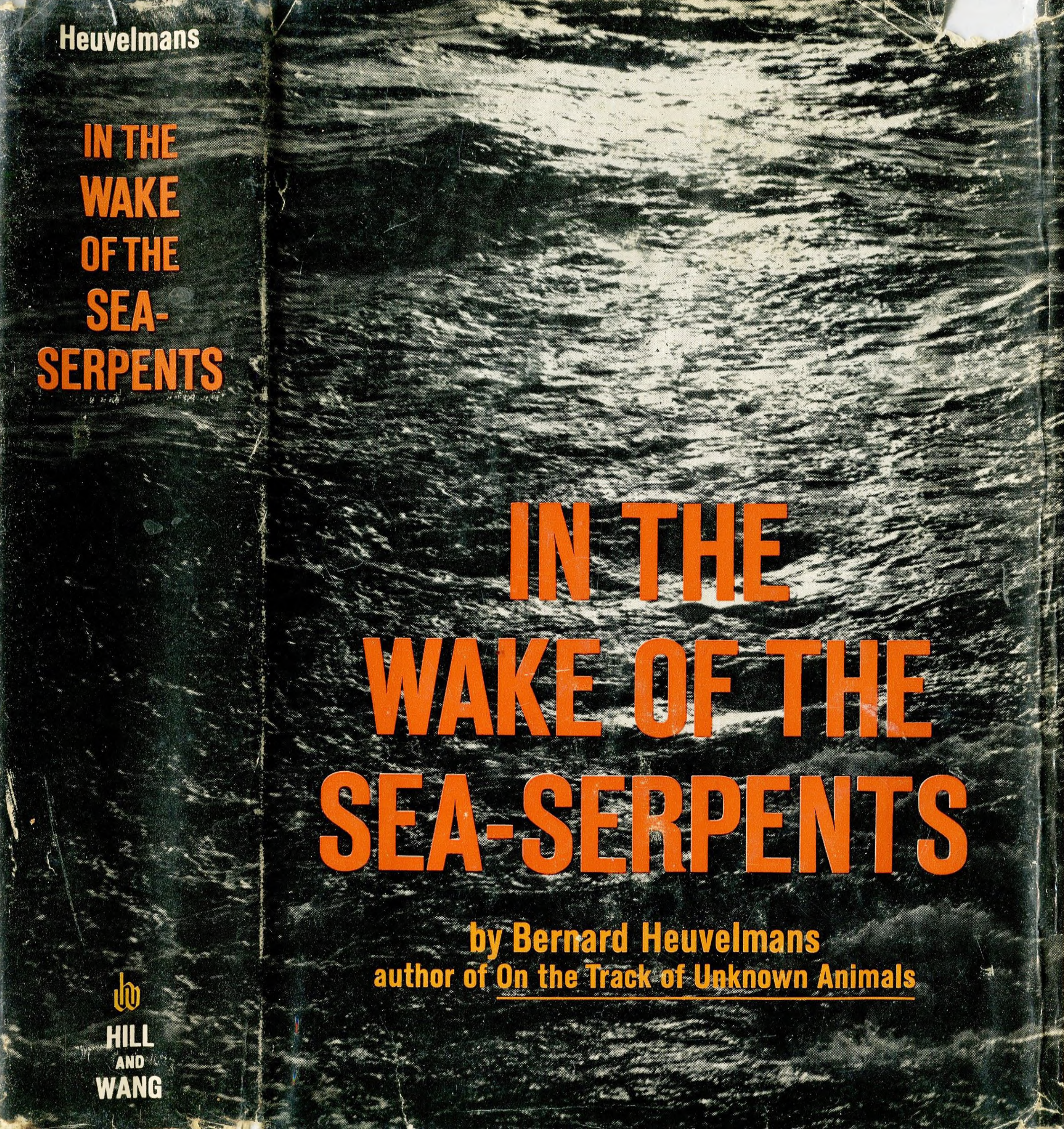

Heuvelmans

IN THE
WAKE
OF THE
SEA-
SERPENTS

HILL
AND
WANG

IN THE WAKE OF THE SEA-SERPENTS

by Bernard Heuvelmans
author of On the Track of Unknown Animals

$10.00

IN THE WAKE OF THE SEA-SERPENTS

by BERNARD HEUVELMANS

Translated by Richard Garnett

WHEN *On the Track of Unknown Animals* was published by Hill and Wang in 1959, its author, Dr. Bernard Heuvelmans, was praised by scientists and reviewers all over the world. (See the back of the jacket for a few of their comments.) Now, after ten years of research, Dr. Heuvelmans does for the sea-serpent what he so convincingly did for unknown land animals.

Like the Abominable Snowman (of which Dr. Heuvelmans wrote in *On the Track*), sea-serpents have on the one hand been ridiculed by skeptics and on the other made the subject of fantastic speculations. There is only one way to settle the question of the sea-serpents' existence: examine the evidence. And for this task no one is better qualified than Dr. Heuvelmans. His thoroughgoing investigations of over five hundred reported sightings—they come from the Atlantic, Pacific, and Indian oceans and span the years 1639 to 1965—of animals thought to be sea-serpents are models of scientific probing and precision, which leave the reader convinced that sea-serpents do in fact exist. Heuvelmans quite willingly calls a hoax a hoax, rejects the doubtful, and accepts only that which can be proved. He has been able to pin down seven distinct types of sea-serpents. Their "convenient informal" names are Long-Necked, Merhorse, Many-Humped, Many-Finned, Super-Otter, Super-Eel, and Marine-Saurian. The book concludes with chronologies of sightings, strandings, and captures.

This translation by Richard Garnett (who also translated *On the Track*) from *Le Grand Serpent de Mer* includes a condensed version of Dr. Heuvelmans' book on the giant squid.

Jacket photograph by Grant White

In the Wake of the Sea-Serpents

by the same author

On the Track of Unknown Animals

In the Wake of the Sea-Serpents

by Bernard Heuvelmans, D.Sc., F.Z.S.

Translated from the French by Richard Garnett
With drawings by Alika Watteau

> There are disconcerting facts affirmed by serious men who have witnessed them, or who have learnt of them from men like themselves: to accept all or to deny all seem to have equal disadvantages; and I venture to say that here, as with all things out of the ordinary, not within the common rules, there is a course to be steered between the credulous and the unbelievers.
>
> La Bruyère, *Caractères*

HILL AND WANG New York

Le Grand Serpent-de-Mer © Librarie Plon 1965
Dans le Sillage des Monstres marins: Le Kraken
et le Poulpe colossal © Librarie Plon 1958
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To the memory of those two ill-fated naturalists

Pierre Denys de Montfort
and Constantin Samuel Rafinesque

and to all those who in perfectly good faith
have bravely reported facts not easy to believe

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B. H.

Note

This translation of *Le Grand Serpent-de-Mer* (1965) is both abridged and augmented. No material passages have been omitted, but some have been condensed, thus making room for reports of 39 additional sightings, both old and recent. Chapter Two is also a new insertion and is a very drastic abridgment, to barely a tenth of its original length, of some parts of the author's previous book, *Le Kraken et le Poulpe Colossal* (1958), none of which has appeared in English before. The history of the giant squid is very relevant to that of the sea-serpent, but to include the whole of that fascinating and discursive work would have been quite impossible.

R.G.

I

To the Incredulous Reader

It is an old maxim of mine that when you have excluded the impossible, whatever remains, however improbable, must be the truth.

SHERLOCK HOLMES in *The Beryl Coronet*

IN THE summer months, in what is called the 'silly season', it is usual for the sea-serpent to appear in the newspapers. This, according to the man-in-the-street, is to make up for the lack of other news during the holidays (as if acts of God and follies of mankind were also on holiday, and all the soldiers and revolutionaries, criminals, sportsmen and record-breakers, the marital affairs of royalty and extra-marital affairs of film-stars, all took a rest). And the implication is that the serpent is more often found in the popular press than in the ocean.

In point of fact this gibe is as stale as it is baseless. Only a few journalists are ignorant enough to repeat it and keep the notion alive in their readers' minds. Yet none of them, however short of copy he might be in the silly season, would dare to invent a sea-serpent story from scratch, such is the scorn in which the subject is held. Far from being a godsend to the journalist, the sea-serpent has become his *bête noire*.

The great sea-serpent is primarily a matter for zoologists. The layman who wants to make up his mind should find out their views on the subject, especially those who have studied the problem. No doubt he will be surprised to find in the scientific journals opinions as contrary to the general view as that of Professor Léon Vaillant of the French National Natural History Museum, who said at the beginning of this century: 'The existence of the sea-monster commonly known as the sea-serpent is no longer in doubt today.'

He was by no means alone in thinking thus. Both before and after him many other naturalists, and not unimportant ones at that, expressed the same view.

The sea-serpent's existence is frequently argued on the basis of authority, 'Professor So-and-so, who knows the subject backwards, maintains that there is no such thing, so the matter is settled.'

The reader may be considered as one of a jury sitting on this question, and may be susceptible to this line of argument, so I am glad to list some of the most eminent supporters of the sea-serpent, which in fact has excellent and extremely copious references, for this will at least show that if one believes in the beast's existence one does so in good company. Moreover it is encouraging to know at the beginning of such a lengthy work as this that, for those who have studied the subject, it is the beast's identity alone that is in question. In zoological catalogues it is gradually exchanging the heading of 'legend and native belief' for that of *'incertae sedis'* (classification doubtful).

In 1820 Sir Joseph Banks, who had sailed with Captain Cook and had become the arbiter of science in England, affirmed his 'full faith in the existence of our Serpent in the Sea'. In France, after a spectacular and lengthy transatlantic appearance of the beast in 1817, Ducrotay de Blainville, professor of zoology and comparative anatomy at Paris, remarked: 'If we now wish to examine strictly the very existence of the great marine serpent, we must admit that it would be difficult to deny that there has appeared in the sea off Cape Ann a sort of animal of very large size, much elongated and swimming rapidly.' And several years later William J. Hooker, who was afterwards knighted and became one of the greatest names in botany, said of the sea-serpent:

> It can now no longer be considered in association with hydras and mermaids, for there has been nothing said with regard to it inconsistent with reason. It may at least be assumed as a sober fact in Natural History quite unconnected with the gigantic exploits of the *God Thor*, or the fanciful absurdities of the Scandinavian mythology. We cannot suppose, that the most ultra-sceptical can now continue to doubt with regard to facts attested by such highly respectable witnesses.

In Germany Professor Heinrich Rathke, pioneer of the science of animal development, was no less explicit: 'There can clearly be no doubt that in the seas around Norway there is a large serpentine animal which may reach a considerable length.'

In due course this view gathered weight; A. D. Bartlett, who was for a long time curator of the Zoological Gardens in London, maintained in 1877 that it was, 'unfair, unwise and a great mistake, to disregard and throw overboard, as it were, the evidence brought by these different observers, simply because we cannot at present define exactly by specimens or otherwise, the exact nature of the creatures that have been observed.' And in 1893 T. H. Huxley himself wrote to *The Times*, 'There is no *a priori* reason that I know of why snake-bodied reptiles, from fifty feet long and upward, should not disport themselves in our seas as they did in those of the cretaceous epoch, which, geologically speaking, is a mere yesterday.' Finally, in *Oceanic Ichthyology* (1895), which was the bible of American marine biology of its time, George B. Goode and Tarleton H. Bean wrote, 'It cannot be doubted, for example, that somewhere in the sea, at an unknown distance below the surface, there are living certain fish-like animals, unknown to science and of great size, which come occasionally to the surface and give a foundation to such stories as those of the sea-serpent.' All the great American oceanographers were of the same opinion.[1]

Several well-known naturalists published detailed studies of the sea-serpent. Besides those two great Victorian writers of popular science, Philip H. Gosse and the Rev. J. G. Wood, there was Rafinesque, the wayward but inspired scientist who undoubtedly described more species of plants and animals than anyone else, and Dr A. C. Oudemans, director of the Royal Society of Zoology and Botany of The Hague.

Meanwhile certain naturalists who were partisan enough to edit their own journals—Lorenz Oken and Ludwig von Froriep in Germany, Edward Newman in Britain and Benjamin Silliman in the United States—fought to make the sea-serpent the subject of scientific study. Silliman, a geologist and chemist of repute who held a chair at Yale, had coolly remarked in 1827, 'To us it seems a matter of surprise, that any person who has examined the testimony, can doubt the existence of the Sea-serpent.'

It was just the same in the twentieth century. In 1903 E. L. Trouessart, professor at the National Museum of Natural History, reckoned that he had the right to hope that 'in a few years from now' the great sea-serpent would no longer be a myth. His colleague, Professor Émile Racovitza, of the Arago Laboratory of Marine Biology at Banyuls, was so convinced of its existence that in 1904 he persuaded the Zoological Society of France to start a campaign of propaganda in order to identify it, if it could not be captured. Charles Pérez, President of the Society, and Professor Edmond Perrier, curator of the Museum and one of the great popularizers of the idea of evolution, both wrote articles discussing the sea-serpent's identity with no mention of any doubt about its existence.

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[1] For instance Hyatt Verrill mentions Louis Agassiz the ex-Swiss biologist, his oceanographer son Alexandre, Professor Alpheus Hyatt, founder of the *American Naturalist*, and Professor Addison Verrill to whom we owe much of what we know of the giant squid.

At the Paris Museum, one of the cradles of zoology and a remarkable nursery of great zoologists, the sea-serpent always seems to have had its share of love. In an exhibition held there in 1954 about the discovery of the coelacanth, a showcase was reserved for the beast, in order to show the great discoveries still to be made in the sea. In France, as we shall see, most marine biologists have no doubts about the existence of our much-ridiculed monster.

In other parts of the world a great deal of specialist scientific opinion is no less favourable. Impressed by the mass of reports about the sea-serpent, the eminent anatomist, D'Arcy W. Thompson, professor of zoology at University College, Dundee, hoped in 1912 that seamen and passengers would keep their eyes open to try to observe, draw or photograph the monster, 'and may so help to transmute this old tradition into the language of prosaic science.' J. Z. Young, professor of zoology at London University, has stressed the rashness of mere disbelief when faced with problems of this kind which have often put the doubter to confusion. The sea-serpent has found supporters all over the world. To mention some of the oceanographers, there are: Dr Anton Bruun, director of the Zoological Museum of Copenhagen in Denmark, Dr André Capart, director of the Royal Institute of Natural Sciences in Belgium, Dr Igor I. Akimushkin of the Oceanographic Institute of the Academy of Sciences in the U.S.S.R., to say nothing of the 'father' of the coelacanth, Professor J. L. B. Smith in South Africa. And in America the scientists in the Scripps Institution of Oceanography have been trying to devise nets and traps strong enough to catch a sea-serpent. There is no lack of names, and I have confined the list to the most distinguished in order not to prolong the argument too tediously.

What of the opposition to this array of learning? Besides the man-in-the-street who takes the matter as a joke, there are some pundits who shrug their shoulders, not having stooped to study so absurd a question, and the opinions of experts who, having come upon a hoax or an honest mistake, have assumed that there can be nothing else. None of this would amount to much were it not for that irresistible force, the force of an accepted idea. There are not many distinguished names among the sceptics. The chief is Sir Richard Owen, who in 1848 wrote a long letter systematically attacking the existence of the sea-serpent to which we shall return later. There is hardly anyone else except Sir Arthur Keith, who was referring particularly to the Loch Ness monster when he said that if so many people had really seen the beast so often and in so many places 'then concrete and unmistakable evidence of its existence should have been at our disposal long before now'. And he concluded that: 'The only kind of being whose existence is testified to by scores of witnesses, and which never reaches the dissecting table, belongs to the world of spirits.'

Sir Arthur Keith spent much of his life studying the Piltdown Man, whose skull and jawbone found their way to his dissecting table, and he made some brilliant reconstructions. Alas, in 1953 and 1954 chemical and carbon-14 tests proved that the skull belonged to a quite modern type of man and the jawbone to an orang-utan. These bones had been cunningly given the colour and patina of antiquity, the ape's teeth had been artificially ground to mimic the wear on human teeth, Pre-Chellean worked flints had been buried where the skull lay together with the remains of fossil pachyderms which had been imported from abroad. It was all a fake.

Before he died in 1955 Sir Arthur Keith had an opportunity to see the folly of trusting too much to 'concrete and unmistakable evidence'. Had he taken more notice of the circumstantial evidence he would have realized sooner, as many other anthropologists had done, that the Piltdown Man was morphologically and chronologically inconsistent.

Generally speaking the present attitude of the more conservative zoologists may be summed up by the conclusion of the article on the sea-serpent in the Eleventh Edition of the *Encyclopaedia Britannica*:

> It would thus appear that while, with very few exceptions, all the so-called 'sea-serpents' can be explained by reference to some well-known animal or other natural object, there is still a residuum sufficient to prevent modern zoologists from denying the possibility that some such creature may after all exist.

There are, however, a few zoologists who deny this possibility and at the same time maintain that this is the normal scientific attitude. James A. Oliver, director of the American Museum of Natural History, is one such. He writes:

> Scientists recognize the fact that new species are awaiting discovery in the depths of the ocean, just as they are in remote areas of the earth. However, the scientists have long known the basic lines of animal evolution and they know something of the *limits* of animal structural modifications. All of the new species discovered in the past century have been forms that belonged to one or another of the long-known major animal groups.[1] All living reptiles breathe by means of lungs. No reptile could live undiscovered in the great depths of the ocean because it would have to come to the surface to get oxygen. Vertical movement from the surface of the ocean to the greatest depths exposes an animal to terrific environmental changes, and no animal is adapted to survive at all depths. Air-breathers are essentially surface-dwellers or inhabitants of relatively shallow waters.[2] Any true sea serpents would thus occur where man would be familiar with them.

[1] This is true of the 'major animal groups', that is to say phyla, but many species have been discovered that entailed the creation of new families or orders, and even a new class in the case of *Neopilina*.

[2] All the same sperm-whales dive to five hundred fathoms.

Mr Oliver's argument is that the sea-serpent is impossible because a huge serpent could not exist at great depths.

But why should the sea-serpent live at great depths, or even be a true serpent at all?

The sea-serpent's name is against it. It is not difficult to show that most of the unknown animals that have borne this rather garish name could not have been giant snakes. Although the name is misleading I propose to use it, since it has the advantage of priority, and we are used to speaking of hedge-sparrows that are not sparrows and flying-foxes that are not foxes and a host of other misnomers. The question here is merely this: *Are there or are there not in the sea one or more species of giant animals, elongated in shape and still unknown to science?* And all those who have studied the question at all carefully have answered this question in the affirmative. So let us leave the argument based upon authority and proceed to study the beast itself rather than those who have pronounced upon it.

'Show me a single bone of a sea-serpent and I will believe in it,' say the sceptics—and they claim that they are unprejudiced. Others insist that the animal must be alive in an aquarium or stuffed in a natural history museum. But in fact there are other ways of proving something. J. H. Wigmore, the American legal expert, maintains there are three kinds of proof: 'Testimonial, Circumstantial and Autoptical,' that is to say those founded upon the evidence of witnesses, circumstantial evidence, and that of one's own eyes.

Oddly enough, in a court of law, evidence of the last kind—all that the doubters will accept—is inadmissible, at least in criminal cases. Suppose someone were so rash as to commit murder under the very eyes of the judge and jury, they would all become witnesses and be disqualified from judging his guilt. Criminal cases are always judged on the evidence of witnesses and circumstantial evidence. Most convictions depend in practice upon presumption, a collection of corroborative indications of guilt being held as better proof than witnesses' testimony, for the fact is that the great majority of wrongful convictions are based on testimonial evidence.[1]

Wigmore's remarks about evidence are of general application, and the existence of any creature may be established by testimonial, circumstantial or autoptical evidence. In other words one may reasonably admit that an animal exists because witnesses say they have seen it, because a set of apparent signs concur to render its existence extremely likely, or because it is always possible to go and have a look at it or part of it.

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[1] Of the 65 people convicted in error whose cases were studied by Professor Edwin M. Borchard in his book *Convicting the Innocent* there were only 4 whose guilt was based entirely on circumstantial evidence, and 8 partially so. The other 53, 80 per cent of the total, were victims of false identification or false evidence.

It is proof upon the last type of evidence alone that the sceptics insist upon. But they have no grounds for despising other forms of evidence, upon which most of man's knowledge depends. No one has ever seen an atom, a radio-wave, or the metallic core of the Earth; no one today can see Nebuchadnezzar or Joan of Arc or the smallest fragment of their bodies. But who would deny their existence because of the lack of autoptical proof?

Hundreds of witnesses of the sea-serpent's existence will be quoted in this book. As Dr Frederic A. Lucas, who was for twenty years director of the American Museum of Natural History, observed, there is more sworn evidence for the beast than a court of law would need to prove any ordinary case.

All the same the frailty of human testimony must be seriously considered. The witnesses may be honest but mistaken, or dishonest and mislead us. A false identification or a hoax is always possible.

In the first case the witness takes a known animal for an unknown one. As few people, even experts, know all the wealth of creatures that the sea has revealed to us to date, this sort of mistake may be quite common. But one of the most widespread ways of exploding the 'myth' of the sea-serpent is to pretend that *all* the encounters with the monster are due to faulty observation of one of the following phenomena (the list is taken from a recent edition of the *Encyclopaedia Britannica*): porpoises swimming in Indian file, flights of sea-birds, masses of floating seaweed, basking sharks, porbeagles, chimeras, tunny, oarfish, nemertean worms, sea-lions and giant squid.

The only answer to this allegation is to be quite merciless in sorting out the items in the dossier. Whenever there is the least chance of a mistake the report must be rejected. No doubt some genuine sightings may thus be discarded, but this does not matter much if they are vague to the point of ambiguity.

There remains the possibility of a hoax, and there is no denying that a whole series of hoaxes have brought the history of the great sea-serpent into disrepute. These hoaxes are said to justify the man-in-the-street's incredulity as well as the scientist's.

This is far from true, for if some of the reports have been shown to be false, does not this show that hoaxers can be exposed? The grain can certainly be winnowed from the chaff. But can it *always* be done?

To establish the number of false reports in the dossier is a matter rather like the statistics of unpunished crimes. Besides those which have been unsolved there are those which have been undiscovered because they were unsuspected.

May there not likewise be hoaxes that have not been discovered, and may not even be discoverable? Hoaxes start off with a considerable advantage, for one can never be *absolutely* certain that a report that seems perfectly genuine may not be a hoax, but one can always be *absolutely* certain that a proved hoax cannot be a true report.

But this advantage is immaterial in practice. When I started work on the sea-serpent a dozen years ago, I thought I would find it very hard to distinguish the true reports from the false. To my surprise I found that with very few exceptions all the published reports fell into two quite distinct categories: accounts that were obviously honest, sober in their tone and in the facts reported, usually confirmed by several independent witnesses and sometimes full of details that only an expert could have invented; and accounts that were obviously false, suspicious in tone, describing spectacular and dramatic events and usually contradicting themselves. As that great lawyer Daniel Webster, who incidentally will be one of our witnesses, put it, 'Falsehoods not only disagree with truths, but usually quarrel among themselves.' However much one checks and cross-checks the first category it still holds water. The second collapses at first glance.

John le Carré's account in *The Looking-Glass War* of the false reports designed to delude the Western intelligence agencies admirably defines these hoaxes—and my feelings on ploughing through them:

> There was the boring similarity of technique; the grain of truth carefully reconstructed, culled from newspaper reports and bazaar gossip; the follow-up, less carefully done, betraying the deceiver's contempt of the deceived; and finally the flight of fancy, the stroke of artistic impertinence which wantonly terminated a relationship already under sentence.

There seems to be something in the very nature of a hoax which makes it easily recognizable. This is because of the motives which inspire it. These are the desire to make fun of someone, to become famous, or to make money.

A hoax perpetrated in order to make fun of someone can never be lasting and remain unrevealed, for the whole point of such a hoax is that it should subsequently be publicly shown to be false.

A hoax motivated by the desire to make money—in this case by a magazine article or even the royalties on a book—or one that is intended to astonish the crowds must be an extraordinary, sensational story. For what is to be gained but ridicule by reporting that a large serpentine sea-animal had been seen to pass by and was apparently harmless in its habits? It is hard luck for the liar that the more sensational his story is the more one suspects it to be a hoax.

If it is not to be immediately suspect, a false report must therefore be inspired more by the wish merely to deceive rather than to attract attention. It would have to be quite disinterested and be due to pure malice. Its author would have to be perverse enough to be happy to enjoy his joke in secret, to commit a hoax for no more reason than Iago committed a crime. This can happen. The man who invented the Piltdown Man was an example.

But would he remain undiscovered for long?

A hoax that is to be credible must clearly offer some apparently sound guarantees of its authenticity: circumstantial description, numerous or substantial witnesses and possibly material evidence. These can always be checked. Such a hoax can only remain undetected if it is accepted unchecked. If the circumstances are checked, the witnesses listed and the exhibits called for, it usually bursts like a bubble.

Of course there may be convincing circumstances. A cautious hoaxer could merely insert the appearance of some imaginary creature into an otherwise true adventure. He would beware of promising material evidence —a photo, a scale taken from the monster, or even its head pickled in brine— which he would find it hard to produce when the time came. But his co-witnesses would have to be complete inventions, for it is a fact that accomplices in a hoax—especially if they are of different sexes, ages or social classes—always give themselves away in the end. And the more there are of them the greater the risk that one of them will spill the beans. If they are to play the game to the finish, they must all be driven by the same motive, and this is hard to imagine. One Iago may be possible, but a gang of them is surely out of the question.

Just like a perfect crime, a hoax has little chance of remaining undiscovered unless it is committed by one man. But the lack of corroborative evidence lessens its value and does not help it to be believed.

There is one last type of hoax: that designed not to deceive the public but to enlighten it. In the history of science and historical and archaeological research there have been rare cases of distinguished men fabricating false evidence in order to clinch a pet theory. Thus an ardent supporter of the sea-serpent, exasperated by the general incredulity, might falsely claim to have seen one with his own eyes. Knowing the beast's dossier he would be able to describe it exactly and be able to give a very detailed and consistent account of it. But would he deceive anybody? As the person most likely to benefit from the crime, his evidence would be particularly suspect. A notorious defender of the sea-serpent would be the last person to risk inventing an encounter with his protégé—and even to be able to report a genuine encounter in good faith.[1]

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[1] For instance I have spent much time in the last few years eagerly scanning the sea and even the dark waters of Loch Ness. 'And what if I *should* see one?' I thought—and it was not a comfortable idea. For if I should have the luck I had longed for so much, it could only seem too good to be true, and my whole book would be suspect. I should have to make a bitter choice whether to sacrifice the book upon which I had spent so many years' work, or to keep my mouth shut about a report which would be of unusual value coming from a professional zoologist who had made a particular study of the problem.

Thus, however carefully it is constructed, a hoax seems fated to destroy itself. The least exaggeration or sensationalism, the slightest mistake and the whole thing becomes suspect. If it is to be perfect, to be quite undetectable, it cannot offer any guarantee of its veracity.

If, after all, there are some undetected hoaxes in the sea-serpent's dossier, there cannot be many. And to suppose that *all* the reports that cannot be explained by known phenomena are hoaxes is an impossible explanation.

As Sherlock Holmes remarked, 'How often have I said to you that when you have eliminated the impossible, whatever remains, however improbable, must be the truth.' If we discard all the reports that could be the result of a mistake or mischievously invented, there still remain a whole series that appear to be honest and authentic. Taking them together, one can arrive at most valuable conclusions which the contents of each report taken by itself would never have led one to expect.

One would expect, *a priori*, that this collection of reports would be very varied. It would indeed be a miracle if all the unknown large elongated marine animals that have been seen over the centuries and described for lack of a better name as 'sea-serpents' should belong to one and the same species. And even if it were the same there would be differences due to age and sex, to say nothing of geographic, seasonal or merely individual variations. A glance at several reports taken at random does indeed show several dissimilarities.

The problem is firstly to discover how many dissimilar types are involved and to determine the characteristics of each, and then to try to establish whether they belong to one or to several different races or species, or even to different genera or perhaps to more widely separated zoological categories.

As soon as a large number of descriptions are compared, we find a certain number of characteristics, some of them common to all, others to only a certain number, and among the latter there are those which are *variable* (the same individual grows with age, the same species may be found in very different places, various individuals of the same race and sex may be light or dark in colour) and those which are *contradictory* (a beast cannot be all blue and all yellow at the same time, have two feet at times and four at others, have skin that is both quite smooth and covered with scales, and so on).

When the characteristics reported have been carefully classified we find that certain of them are generally associated (to take a fanciful example, the blue animals always have four legs while the yellow ones have only two). When the reports are found to agree in this way, one can not only complete some reports (for instance by determining the likely number of legs of a blue or yellow animal whose body was not all visible) but can also find other common and distinct characteristics (to continue the example, the blue quadrupeds are found all over the Atlantic, but the yellow bipeds only in the tropics of that ocean). Characteristics may even appear which single witnesses could not have revealed (the blue quadrupeds are only seen in the North Atlantic in summer, and may thus be presumed to go there in a seasonal migration).

When the analysis of a collection of mixed reports reveals a certain coherence, that is, when one can deduce general laws from them, this clearly confirms their authenticity. It may even eliminate doubtful reports (if almost without exception yellow bipeds have been seen only in the tropical Atlantic, an account of a single encounter with a yellow biped in the North Pacific should be treated with suspicion).

When there are enough reports their value is not just that of testimonial evidence, it is the much greater value of circumstantial evidence, since when analysed they reveal a structure of evidence that amounts to incontestable proof. Moreover it is not just the existence of one or more creatures that is established, but from a study of a mass of reports there emerges a great deal of positive information about their appearance, anatomy, physiology, psychology, habits, habitat and geographical distribution.

Most of the people who have written about the sea-serpent have done so on the basis of a few stray reports or even upon an obvious hoax. This has resulted in a general misunderstanding of the problem, and, what is worse, has hindered if not prevented further investigation.

Nothing can better express the atmosphere of incredulity and derision in which the sea-serpent is steeped than the words of Captain Cringle of the *Umfuli* who saw one of these creatures in 1893 and described it with perfect sobriety, 'I have been so ridiculed about the thing that I have many times wished that anybody else had seen that sea-monster rather than me.'

There are many others that have regretted their innocence in reporting having seen a sea-serpent and thinking that in so doing they were serving science. This is why so many, warned by unhappy precedents, have only admitted to such an encounter many years later and as a result of a scientific inquiry. In the memoirs of Vice-Admiral H. L. Fleet, R.N., published in 1922, he writes of 1892:

> At last we ... returned to Bermuda. On the passage Moubray [Lieutenant E. H. Moubray, R.N., the *Tartar*'s navigating officer] and I saw what we considered to be a sea-serpent, but decided to say nothing about it, having due regard to the scepticism of the British public.

It is more than likely that even today many witnesses of the great sea-serpent are silent in the same way for fear of being laughed at. It may well be that the present attitude of mocking scepticism may be one reason why reports of the beast seem to be less frequent during the last twenty or thirty years. It is often thought that there are now fewer reports than during some periods of the nineteenth century, when the sea-serpent appeared several times a year. Most of the experts who have studied the question have even thought that the species was becoming extinct and that only a few very rare specimens survived. This view is quite unjustified, as I have found from my own records. Apart from a single one before 1639 there are no circumstantial and dated reports before the first half of the seventeenth century, there were only four between 1650 and 1700 and a further four between 1701 and 1750. The number increases to twenty-three between 1751 and 1800 but they do not become really frequent until the first half of the nineteenth century: 166 from 1801 to 1850 and 149 from 1851 to 1900. The rate did not drop in the twentieth century, for there were 194 between 1901 and 1950. As there are already thirty for the decade from 1950 to 1960 we can expect about 150 during the second half of the twentieth century if the rate continues. Thus since 1800 about 150 sea-serpents have been reported every half-century. As a third of these reports were based, as we shall see, on hoaxes or mistakes, this makes 100 sightings every fifty years, an average of two a year, right up to the present.

The notion that encounters with sea-serpents are becoming rarer is thus a complete illusion. There are two reasons for it. Firstly, the newspapers, for fear of ridicule (which they themselves were originally responsible for), have become much more discreet about sea-monsters. The brief accounts of them will now be found at the foot of a column on an inner page. Secondly, until the middle of the last century almost all the sightings took place along the coasts of temperate regions in the North Atlantic: Norway on the east side and the United States and Canada on the west. They were in the territorial waters of what we like to call the western world. Since then sightings off these coasts have become much scarcer, but this has been offset by a great increase from more distant parts of the world.

Nevertheless the local decrease in the numbers along our coasts is a fact which has to be explained. The sea-serpent has not been hunted by man like the great whales and is not threatened with extermination by man, who is today the chief agent in the extinction of animal species. But, as creatures of this kind are usually found to be shy and retiring, and as their geographic distribution allows great possibilities for migration, it is very likely that with the increase of maritime traffic, and especially with the general use of propellers, sea-serpents have avoided the active sea-lanes more and more. Ships nowadays keep strictly to these lanes, which cover but a very small area of the ocean.

This was not so in the days of the sailing ship. Then a ship's course was governed by the direction of the wind and the current, and it was rare for the journey between two points to follow exactly the same route. There was thus a much greater chance of seeing creatures whose habits tended to keep their existence secret.

These chances were also increased by the relative quietness of sail. Pierre Denys de Montfort was perhaps the first to realize that the noise of modern life did not help the zoologist in his work, especially at sea:

> Sound waves can be heard much more strongly in the water than in the medium of the air: all our observations concur in supporting this physical fact ... Let us judge what effect there must now be upon the organs of hearing of the inhabitants of the waters, cannon-shots with which men tear one another apart in time of war and salute one another in time of peace. These human thunderclaps, which carry further in the depths of the waters than thunder itself in the valleys and ravines of the mountains, must drive away the fishes, far from the places inhabited by man or navigated by his ships, and thus several species must have taken to the high seas, leaving the coasts behind them; it is probable that this is the reason for the rarity nowadays of appearances of the colossal octopus which the old naturalists spoke of infinitely more than the naturalists of today.

What is true of the 'colossal octopus' (whose identity I shall discuss in the next chapter) applies also to the sea-serpent. And what is true of cannon-shots, which were actually so rare on the high seas as to be negligible, is far truer of the engines which have taken the place of sail.

Anyone who has felt what it is like to be a fish, by hunting or exploring underwater, will have realized how the whirr of even a small outboard's propeller can be felt for a considerable distance and in this virtually incompressible medium is converted into most disagreeable vibrations. It is not surprising that most sea-animals should have deserted the areas of heavy sea traffic and have dived at the first alarm along the great sea-lanes when the noise of steam took the place of the ghostly silence of sail. The members of the Kon-Tiki Expedition, who took a route barely travelled before and used the most silent of all forms of locomotion, were able to witness the pullulation of life in the inviolate stretches of the seas.

> The sea contains many surprises for him who has his floor on a level with the surface, and drifts along slowly and noiselessly. A sportsman who breaks his way through the woods may come back and say that no wild life is to be seen. Another may sit down on a stump and wait, and often rustlings and cracklings will begin, and curious eyes peer out. So it is on the sea too. We usually plough across it with roaring engines and piston strokes, with the water foaming round our bows. Then we come back and say that there is nothing to see far out on the ocean.

Many of those who saw something after all did not dare to report it. The sound of laughter has driven away as many sea-serpents as that of ship's engines.

I do not believe that there is any fear that the great sea-serpent, which has puzzled man for thousands of years, will disappear without bequeathing its secret. Moreover its secret is no longer complete.

As I have already said, we do not lack witnesses of our supposedly imaginary creature. I have collected reports of more than five hundred sightings which seem to refer to it. Some are by single people, but these are by far the least common and amount to barely a quarter of the total. Most were made by several witnesses, and in three cases there were more than a hundred of them.

Altogether more than a thousand people whose names are given, or exact numbers specified, are known to have seen what we call a sea-serpent in the last 300 years. Besides these cases where we know the numbers of witnesses fairly accurately, there are some forty sightings by unspecified numbers of people, 150 groups of people described as 'many'—usually the crews of ships of various sizes. Many huge animals which find a place in the zoological manuals—giant squids, giant jellyfish, devilfish, whale-sharks, beaked whales, and others—have not been seen by so many people as this beast which is generally thought to be imaginary. But in their case we have a skull, a piece of the skeleton, a scrap of skin, a tentacle, or some other bit of their anatomy.

With the sea-serpent there does not seem at first sight to be any comparable material evidence. There are plenty of sketches, of course, but they could be blamed on the imagination, and a few indistinct photographs. But even if there was no palpable evidence of their existence, sea-serpents would not be the only giants of the deep to be known only from visual reports. There are several species of cetaceans whose existence is generally accepted by science although no one has been able to examine a single carcase. As Philip H. Gosse pointed out a century ago, this is true of a cetacean with *two dorsal fins*. Rafinesque was disbelieved when he first published a report based on Mongitore's observation of it. But Quoy and Gaimard confirmed its existence in October 1819 when they saw a whole school between the Sandwich Islands and New South Wales.

> Everyone on board was surprised, as we were, [they wrote] to see on their foreheads a horn or fin curved backwards, like the dorsal one. The volume of the animal was about double that of the ordinary porpoise, and the top of its body, as far as the dorsal fin, was spotted with black and white.

Nobody has yet captured a single specimen of this species which Quoy and Gaimard named *Delphinus rhinoceros*.

A species of sperm-whale (*Physeter tursio*) with a remarkably high dorsal fin was long ago reported more than once around the Shetlands, one of the witnesses being Robert Sibbald the first great authority on the cetaceans. But even today no naturalist has examined the least scrap of the beast, though it was reckoned to be 60 feet long.

Gosse himself was once able to spend twelve hours watching a shoal of dolphins with long snouts, flesh pink at the end, in the North Atlantic. They were nearly 30 feet long and clearly belonged to an unknown species. 'The body was elongated, black above, white beneath; the swimming paws appeared white, even on their upper surface, but surrounded by dark colour on the body;—this is remarkable.' No specimen of this species—probably belonging to the family of Beaked Whales—has been captured. Yet no one has called Mr Gosse's sanity and veracity in question. But when the Beaked Whales are a respectable and well-known family, unlike the sea-serpent—however many times it is seen by competent naturalists.

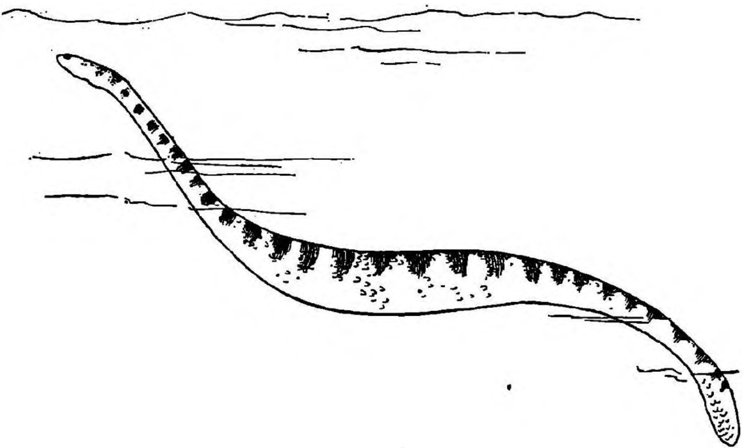
A cetacean with a very high dorsal fin and apparently confined to the Antarctic was first mentioned by Sir James Ross and by McCormick; it was quite distinct from the Killer Whale, which has almost as high a dorsal fin but is unmistakably dappled like a Friesian cow. Dr Edward A. Wilson, who went on Scott's 1901–4 *Discovery* expedition has described how he saw three on 28 January and four on 8 February 1902, and picture of them appears as Plate 1. This animal has had very few witnesses and no remains are to be found in any museum, but nobody has doubted its existence for it is lucky enough not to look like a serpent.

If then we admit that sea-serpents are not an illusion, what are they? First of all there is no doubt that most of them are *not true serpents*—that is to say, snakes.

Admittedly there *are* sea-snakes, which live in the warm seas of the Pacific and the Indian Ocean. There are some fifty species altogether belonging to fifteen different genera and forming the family of Hydrophiidae. There are two sub-families, the Hydrophinae, which are so well adapted to marine life that they have altogether lost the ventral scales which enable snakes to crawl on land, and the Laticaudinae, where these scales are merely reduced in size and which form an intermediate stage to the cobras (Elapidae) from which they derive. The Hydrophinae are viviparous—an air-breathing animal cannot hatch from an egg in the water—but the Laticaudinae are oviparous and come ashore to lay.

Most snakes swim well—but in calm water. To swim in water that is never still needs special aptitude, and for this reason most sea-snakes tend to have their bodies flattened laterally, which increases their effective surface, since they wriggle from side to side like all reptiles. The tail is particularly flat, shaped like an oar. It acts like a scull and as a rudder. To be effective a stern scull must be below the centre-line of the hull, and the tail of a sea-snake is curved downwards, the top edge being longer than the bottom. When these features are pronounced the snake can hardly crawl on dry land but must lie on its side.

These snakes are quite at home in the water. Their nostrils have valves which seal them hermetically; their lungs are large with a reservoir of air which enables them to remain underwater for at least eight hours at a stretch.



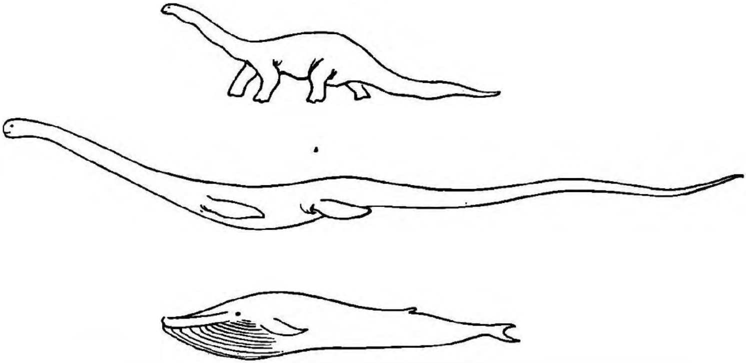
1. Sea-snake (*Hydrophis*)

The most highly specialized of the Hydrophinae, such as *Hydrophis fasciatus* and *Microcephalophis gracilis*, have a long thin head and neck, while the abdomen is four or five times as thick as the neck, so that they look like a miniature plesiosaur, but without its flippers. As a result the inertia of their great belly enables the head and neck to strike at their prey as quickly and accurately as their cousins on land. They live on fish, especially eels.

All this shows that to be a sea-snake one must have a very special anatomy and physiology. This will be most relevant to the great sea-serpent, which has the same problems to solve.

Most sea-snakes do not seem to go far from the shore. But some are so well adapted to a life entirely at sea that it is not surprising that whole shoals of *Pelamis platurus* are sometimes met in the middle of the Pacific Ocean. Moreover this species is as common on the west coast of tropical America as off Africa and Madagascar, which suggests that it has migrated extraordinarily far.

The sea-snakes are extremely venomous—even more so than their closest relatives on land, the deadly cobras, mambas and so on. But they do not attack man, and the fishermen in the East Indies who often fish up dozens in their nets seem able to pick them up and toss them back in the sea without being bitten. In fact the Hydrophiidae are dangerous only to people bathing during the monsoon. To prevent themselves being dashed on the shore by the waves during monsoon storms the poor creatures grab desperately at anything they can find, seizing it in their fangs. If your arm or leg happens to serve as their lifebuoy it is unlikely that any kind of lifebuoy will be able to save you.



2. The size of a hypothetical sea-serpent compared to that of a Brontosaurus (*above*) and a Blue Whale (*below*)

Most species of sea-snakes are less than 4 feet long. But *Hydrophis cyanocinctus* and *spiralis* may reach 8 feet and more, though never as much as 10.[1]

We shall find in due course that sea-serpents have little in common with sea-snakes. While they are much larger they are also much less dangerous. According to the more trustworthy reports, the smallest ones—presumably young specimens—are nearly 18 feet long, and the largest about 250 feet.

All the same, even this great size, which is certainly very exaggerated for almost all the reports speak of a beast no more than 150 feet long, is certainly by no means impossible. There is a complete skeleton of a Diplodocus found in Wyoming which is 87 feet long from nose to tail, and from the bones of other incomplete dinosaurs of the same family, some may well have been as much as 120 feet long. If there were land vertebrates of this size, sea-vertebrates could be much longer, since the sea is the favourable medium for giant size.

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[1] As these species are also the fattest, it is hardly surprising that that old pirate William Dampier said in the eighteenth century that he saw one north of Australia which was 'as big as a man's leg'.

Moreover, if there were a sea-serpent 250 feet long it would be within the limits of the largest known sea creatures if we consider its weight. Even if it were not a true serpent, and were merely serpentine at the neck and tail (those parts which usually appear above water), the body could not be more than some 70 feet long and its weight would certainly be less than that of the largest whales, which are nearly all body.

The official world's record for size is held by a Greater Rorqual, or Blue Whale, (*Sibbaldus musculus*) 113½ feet long and certainly weighing more than 150 tons—probably it was more like 170 tons. A sea-serpent 250 feet long would weigh no more. An 89-foot rorqual that was cut up and weighed bit by bit amounted to 119 tons, while it has been calculated that a Diplodocus of the same length would have weighed hardly 35. And by definition a sea-serpent is more like a Diplodocus in shape than a rorqual.

A Diplodocus three times as long as the specimen just mentioned would weigh nine times as much, that is to say 315 tons, and would be about the same length as our hypothetical 250-foot sea-serpent. But as all animals tend to become slenderer as their size increases it would probably weigh about half this amount, and this would be the sort of weight of a 250-foot sea-serpent: about 150 tons, or 170 at the most.

There is thus nothing impossible *a priori* about the great sea-serpent even in the most extravagant descriptions. There is nothing abnormal or excessive about its size, appearance or habit. And there is no reason why it should not have eluded the examination of scientists down the centuries, as many other creatures have done.

The sea is so vast that it deserves a fair dose of credulity rather than mere disbelief. Even if a real mermaid—not an ugly manatee but a fish-tailed woman—was reported to have been caught, the zoologist would do better to go and have a look rather than just to shrug his shoulders. Three-fifths of the surface of the globe are covered with water, and our ships cross it only along fixed and fairly narrow lanes.

The change from sail to power has reduced the area covered. Instead of being forced to stray by winds and currents, ships take the shortest and quickest route. Even on pleasure cruises the art of navigation is not to stray.

Thus our knowledge of the sea animals that live on the *surface* is like that of a naturalist who knows a country's fauna only from what he has seen from the main roads. And whereas the creatures that live on land are confined to within a few feet of the earth's surface, those in the sea live in a three-dimensional world which may be more than 30,000 feet deep in places and has an average depth of about 10,000 feet.

We have hardly begun to explore this world. Divers rarely go below 50 fathoms, only on the continental shelf, and usually near the coast. They can only know a tiny fraction of the sea's fauna, for habitats are as distinct in the sea as they are on land, and each has its own inhabitants.

The bathyspheres suspended from cables, and even the much more promising free bathyscaphes, have made so few dives and in such restricted areas that their results—though not their potentialities—are still negligible. Man has taken only the first few steps in the abyss. Even the oceanographic expeditions undertaking systematic investigation are still pioneers. There have not been many of them since the *Challenger*'s great cruise of 1872, and their most subtle means of cataloguing the ocean are still very primitive. Trawls and traps cannot hope to catch large animals nor ones that are swift or cunning enough to escape. The most interesting 'monsters' are the hardest to catch.

Nor are all the oceans skimmed by the fishing-fleets. An international conference on natural resources organized by the United Nations in 1949 showed that 98 per cent of fish caught were in the Northern Hemisphere, most of them north of the Tropic of Cancer. In this hemisphere only 60 per cent of the surface is water, whereas in the Southern Hemisphere it is 80 per cent. Thus in the half of the globe which is almost entirely covered by water fishing is virtually negligible.

Since water is not man's natural element his methods of collecting specimens from the sea are quite different from on land. Fishing is always hunting blind, a form of trapping. Skin-divers have revolutionized this, but only in a very small area. For the rest it is almost as if we were stabbing in the sea at random.

In our attempts to catalogue the sea's fauna we have most often had to rely on chance. We have learnt most about many large sea animals from their accidental stranding; and it is astonishing to find how many species of them first came to light in this way, and indeed how many have never been seen in any other way.

The state of our knowledge of the cetaceans is a case in point, even though whales include some of the most enormous animals that have lived on our planet, at least so far as we know.

No family of whales is so mysterious as the Ziphiidae, or 'Beaked Whales', which are really dolphins. *Hyperoödon* is the only one of its five genera which is at all common and the only one which has been known since the beginning of the last century. There seem to be several different species of *Hyperoödon*, or Bottle-nose, reaching a length of about 30 feet, but the one most unlike the others is known almost entirely from skulls washed up in the Southern Hemisphere. Yet *Hyperoödon* has been caught only in the North Atlantic.

Cuvier's Whale (*Ziphius*) was first thought to be extinct when Georges Cuvier described in 1823 a partly petrified skull that had been washed up in the Mediterranean in 1804. Nearly half a century after the first stranding another was washed up in the same place. Later a whole specimen with an identical skeleton was found in New Zealand. Oddly enough in old specimens the skull is almost petrified, fossilized before its time, and in other respects it seems designed to fool the naturalist, for it is light above and dark below, thus breaking all the rules of animal coloration.

Mesoplodon is perhaps the most puzzling genus of all. It was first known from a carcase washed up at Elgin in Scotland and examined by Sowerby. It was brown and had a strangely curved lower jaw with only two teeth. In 1825 a similar beast, but with no teeth at all, was stranded alive at Le Havre. It lived for two days, and sightseers—who had odd ideas about cetacean's diet—tried to feed it on bread soaked in water. Henri Ducrotay de Blainville studied it and christened it *Aodon dalei* on account of its absence of teeth, but subsequent scientists have said that it was just a Sowerby's Whale that had lost its teeth with age. It could well have been a female, for they are often found to be toothless. In 1850 Paul Gervais gave the species the name *Mesoplodon bidens*, which it has kept ever since. Meanwhile several different species of *Mesoplodon* have been reported, but their descriptions are based on so little evidence that it is hard to say whether there are ten or fifteen of them. One of the rarest is Gervais's Whale (*Mesoplodon europaeus*) of which only six specimens are known. The first was found floating in the English Channel in 1840; but the next three were washed up on the coast of New Jersey in 1889, 1933 and 1935, and the last two, a mother and child, in Jamaica in 1953, which was rather unfortunate for a supposedly 'European' animal. Blainville's Whale (*M. densirostris*) has an even more bizarre distribution. Only seven specimens have been found, but they could hardly have been farther apart: in the Seychelles, on Lord Howe Island, south of Africa near Massachusetts, in Madeira and New Jersey. *M. stejnegeri* is known only from two specimens from the Pacific coast of North America, and *M. hectori* from two specimens in New Zealand. The description of *M. bowdoini* is also based on two New Zealand specimens, but as they were only skeletons we still know nothing about their external appearance. And I need hardly say that we know absolutely nothing about the habits of the various Mesoplodons, which are sometimes more than 15 feet long.

We hardly know more about the two species of *Berardius*, Arnoux's and Baird's Whales, which were first described in 1851 and 1883, and which may be over 40 feet long. The second has teeth which no mammalogist would have believed in had they been described by a layman, for they are embedded in cartilaginous sacs, and it seems that they can be erected at will.

New species of Ziphiidae continue to be discovered. As recently as 1937 Oliver had to create a new genus, *Tasmacetus*, after three Beaked Whales of a hitherto unknown type were stranded in New Zealand. They were between 23 and 29 feet long; yet people still say that the sea *cannot* hold any large unknown animals.

In the Delphinidae, or true dolphins, there are likewise many species known only from a few examples—or even a single one. For instance there are some Pied Dolphins (*Lagenorhynchus*) whose external appearance is still uncertain, and one, *Lagenorhynchus wilsoni*, which Fraser and Norman tell us has frequently been seen just north of the Antarctic pack-ice, though no specimen has ever been caught. We also learn from the same authors that many species of *Prodelphinus*, or Spotted Dolphin, a genus first created by Paul Gervais in 1889, have been described, though we know nothing of their habits, many of the descriptions being based only on the skull.

The family of Sperm-whales or Cachalots (Physeteridae) also includes a very rare genus of quite original structure, the Dwarf Cachalot (*Kogia*) first described in 1846. It is 10 feet long, but no living specimen has ever been seen; and were it not for a few accidental strandings we should still be unaware of its existence. Half a dozen species have been described, but upon the basis of so few specimens that we still do not know whether some may not be due merely to individual differences.

The dwarf of the family of true whales (Balaenidae) has been known only since 1864. It is a strange animal with such big ribs that its rib-cage is like a barrel. It is still extremely rare for a Pigmy Whale (*Neobalaena*) to be seen, yet it may be as much as 60 feet long.

The largest known fish, the Whale-shark *(Rhineodon typus)*, whose story is closely linked with that of the sea-serpent, was not, as we shall see, discovered until 1828. The largest of the rays, the Manta or Great Devilfish (*Manta birostris*) was included in the scientific catalogue only in 1829, though Antonio de Ulloa had mentioned fishermen's tales of it between Panama and Guayaquil in 1758.

Thus we see that the largest sea-creatures have often been only recently discovered and are sometimes extraordinarily little known.

In this book I shall try to tell the story of the most abused creature on the globe. I shall do so chronologically and to a large extent in the words of the original witnesses and commentators. This will save those who follow me the labour of referring back to the sources and enable them to take advantage of the work that has taken me a decade in several great libraries of the world. Of course I shall not quote every single report verbatim, for this would treble the length of a book already long enough. But whenever it contains any significant detail—even if it seems to disagree with my arguments—I have included it. Moreover at the end of the book there is a complete and detailed chronological table, analysing all the reports, and a bibliography giving all the sources, chapter by chapter.

Any reader who feels that what follows taxes his belief beyond endurance should be convinced by the next chapter, where he will read how that most incredible of creatures the giant squid has finished its wanderings among the monsters of mythology and returned to the fold of zoology. Let us hope that the naturalist, like a good shepherd, will welcome that other lost sheep, the great sea-serpent.

2

The *Kraken* and the Giant Squid

We now gazed at the most wondrous phenomenon which the secret seas have hitherto revealed to mankind. A vast pulpy mass, furlongs in length and breadth, of a glancing cream colour, lay floating on the water, innumerable long arms radiating from its centre, and curling and twisting like a nest of anacondas, as if blindly to clutch at any object within reach.

HERMAN MELVILLE, *Moby Dick*

THE story of the legend of that many-armed sea monster, the *kraken,* and its gradual revelation as the fact of the giant squid, though independent of that of the great sea-serpent, is strangely parallel and very relevant to it. Both monsters first appear as fabulous creatures, and then are described more accurately in increasing numbers of isolated reports until the evidence should have been convincing, yet both were ridiculed and laughed out of court. With the *kraken* the undeniable existence of anatomical specimens has only recently shaken the general incredulity. With the sea-serpent, where such tangible evidence is, alas, very scant, this is still to come. The giant squid has a Latin name and is found in the zoology manuals. But if Nature had thrown the dice differently the sea-serpent might be the known animal and the *kraken* still a beast of legend.

The story of this legend may well begin with Homer's Scylla. Circe warned Ulysses that his way lay between Scylla and Charybdis. Charybdis is clearly a whirlpool. Scylla is not so immediately identifiable.

> Half-way up the cliff on the western side, facing Erebus the land of death, opens a murky cave ... within which lurks dread yelping Scylla—yelping, for she squeals like a new-born puppy ... She has twelve splay feet and six lank scrawny necks. Each neck bears an obscene head, toothy with three rows of thick-set crowded fangs blackly charged with death. She keeps herself bedded waist-deep in the bowels of her cave but sways her heads out across the dizzy void, and angles with

> them, sweeping the reefs ever and again keenly for dolphins or dog-fish or some greater quarry from among the countless droves which breed in Amphitrite's thundering waves. Particularly she battens on humankind, never failing to snatch up a man with each of her heads from every dark-prowed ship that comes.

Cephalopods, you may say, don't bark and have only one head and not the same number of arms and legs as Scylla. All the same this description strongly recalls an octopus hiding in its lair; for it sometimes anchors itself with two of its tentacles and uses the other six to catch its prey. The ends of the tentacles, usually rolled up on themselves, are very like heads and the 'three rows of thick-set crowded fangs' may well refer to the rows of suckers on the tentacles, even though they are not actually triple. Moreover though an octopus has no voice it may make an absurd noise with its siphon when it is out of the water and sound like a yelping puppy. Scylla may thus be an octopus—but on a Homeric scale.

Even the largest octopuses in the Mediterranean have never been more than 25 feet across or weighed much more than 130 pounds.[1] But what of the other cephalopods?

The class of cephalopods is divided into the tetrabranchs which have two pairs of gills and the dibranchs which have only one pair. These two groups are easily distinguishable, since the only extant members of the first group are of the genus *Nautilus* and are unique in having a handsome spiral shell. All the other recent species are in the second group; some of them have a shell, but it is small and hidden inside the body. The nautilus has large numbers of tentacles—about a hundred—and they are short and smooth, unlike the arms with suckers on the other cephalopods.

There are three chief types of dibranchs: the octopuses, the cuttlefish and the squids. In the octopus the body is a more or less spherical sac to which the head is closely joined. As its name implies, it has eight 'feet'—usually called arms—which are all about the same length and armed with a double row of suckers, except on the eledones, or Musk-octopuses.

The squids and cuttlefishes are rather differently constructed. The head is separated from the body by a narrower neck. The body is elongated and has a horizontal fin which runs all round the body in the cuttlefish but consists only of two lobes on the sides in the squid. These lobes are very flexible and act almost as a propeller. Besides the eight arms, which they share with the octopus, the cuttlefishes and squids have two long tentacles, swelling into a flattened spoon-shape at the end, covered with close rows of suckers. The cuttlefishes can retract these tentacles and shoot them out as it were to harpoon their prey. The squids wave their tentacles around like antennae.

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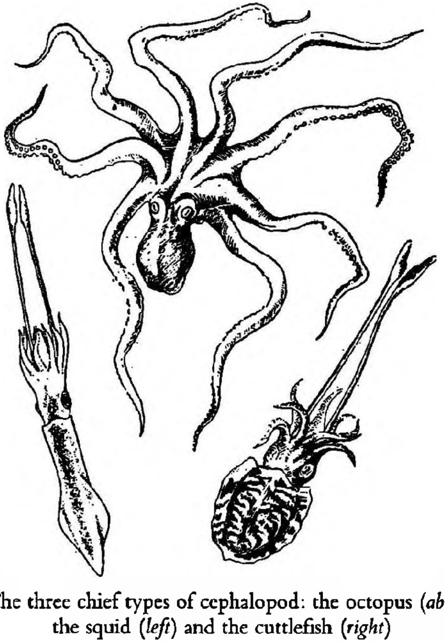
[1] But there is a slender Pacific octopus (*Paroctopus apollyon* alias *Octopus punctatus*) which may be 32 feet across—some say 38 feet—and weigh 275 lbs.

Many writers distinguish these two long tentacles from the eight shorter arms by calling them *peduncular* as distinct from *sessile* arms, while others use tentacles to include the eight arms. Where there is risk of confusion I shall call the peduncular ones tentacles and the sessile ones arms.

These anatomical differences are linked to different habitats and different ways of life. The octopus is built for crawling and lives on the bottom. The more tapering squid with its fins can live in the open sea. The octopus waits in its lair for its prey. The squid chases its food at high speed. Squids can in fact propel themselves so strongly and have such a streamlined body like an artillery shell that they sometimes leap out of the water on to land or—more often—on to a ship's deck.



3. The three chief types of cephalopod: the octopus (*above*), the squid (*left*) and the cuttlefish (*right*)

The cuttlefish, which is less slender than the squid and thus less good a swimmer, occupies a habitat half-way between the other two. It does not live in a hole, but it rarely rises above the bottom, where it lies half buried in the sand, almost invisible because of its mimicry, and 'harpoons' any prey that passes.

There are, it is true, various genera which are very different from the basic types, but as they do not come into this story we can safely ignore them.

The next appearance of our many-armed monster in Antiquity is much more matter-of-fact than Homer's Scylla. Aristotle, the first real zoologist, writes that besides the ordinary squid (*teuthis*) which is only a foot long or so, there is also a giant species (*teuthos*) in the Mediterranean 'up to five cubits long'. According to the length of the Greek cubit (which varied from place to place) this would be between 7 feet 7 inches and 8 feet 8 inches. 'The big squids,' says Aristotle, 'are rare: they differ in shape from the little squids in that their pointed part is larger. A circular fin surrounds the whole sac, while there is none in the small one. For the rest, both the large and the small squid live in the high seas.' From what Aristotle says of their anatomy it is clear that he had examined and perhaps dissected cephalopods. But for the big squid, which is 'rare' and lives on 'the high seas' he might have relied on sailors' accounts. Even these big squids are too small to endanger sailors. But Aristotle also writes, in his usual matter-of-fact tone, of larger animals:

> Besides the animals so far studied there are others in the sea which cannot be classified by kind because they are too rare. Among the fishermen with long experience, some claim to have seen in the sea animals like beams of wood, black, round and the same thickness throughout. Others of these animals are like shields: they are said to be red in colour and to have many fins.

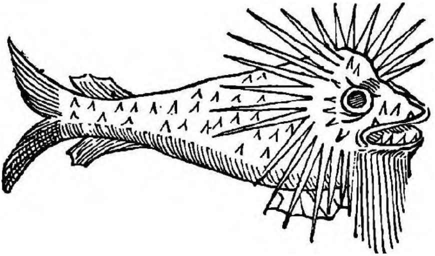
As I shall show later, I believe that the first of these bald references concerns the sea-serpent. The second is the giant squid, which is very big indeed.

Pliny is more sensational and tells of a polyp with 30-foot arms which climbed out of the sea to eat fish that were being salted at Carteia in Spain and was eventually killed. Although this exploit is more within the compass of an octopus than a squid—a squid cannot even get back into the water if it is washed ashore—Pliny's description is much more like a squid. He distinguishes between its long peduncular arms with which it whipped some dogs and its more solid sessile arms with which it bludgeoned them. He also describes holes like cups in its arms which are more like the squid's suckers than an octopus's. The octopus's are flat like coins with a hole in the middle, whereas the squid's are like hollow cups on a stem. (See Fig. 5, page 53.) These details may be based on a squid that had nothing to do with the salt fish.

Aelian tells an even more horrific version of this story, situating it in Italy and making the beast an unquestionable octopus. He adds that these cephalopods sometimes grow so huge with age that they are as big as the biggest whales.

This leads us to the Dark and Middle Ages where the whale and the giant squid were strangely combined in the legend of the island-beast, which was propagated in the original bestiary, Physiologus, and reached its peak in the legend of St Brandon (Brendan, Brennan and various other bizarre Irish spellings):

> And then they sailed forth, and ... at last they went upon an island weening to them that they had been safe, and made thereon a fire for to dress their dinner, but S. Brandon abode still in the ship, and when the fire was right hot and the meat nigh sodden, then this island began to move, whereof the monks were afeard, and fled anon to ship and left the fire and meat behind them, and marvelled sore of the moving. And S. Brandon comforted them and said that it was a great fish named Jasconye, which laboureth night and day to put his tail in his mouth, but for greatness he may not.



4. Olaus Magnus's 'monstrous fish', 1555

The legend of the island-beast is treated seriously as late as 1555 by Olaus Magnus in his *Historia de Gentibus Septentrionalibus*, where he also tells of 'monstrous fish' that are more to our purpose.

> Their Forms are horrible, their Heads square, all set with prickles, and they have sharp and long Horns round about, like a Tree rooted up by the Roots: They are ten or twelve Cubits long [20 to 24 feet], very black, and with huge eyes ... the Apple of the Eye is of one Cubit [2 feet], and is red and fiery coloured, which in the dark night appears to Fisher-men afar off under Waters, as a burning fire, having hairs like Goose-Feathers, thick and long, like a Beard hanging down; the rest of the body, for the greatness of the head, which is square, is very small, not being above 14 or 15 Cubits long; one of these Sea-Monsters will drown easily many great ships provided with many strong Marriners.

There is good reason for thinking that this creature is a giant squid, though the engraving does its best to conceal the fact, as almost every feature will be confirmed by what we shall subsequently learn.

The classic text for the legend of the *kraken* is in *The Natural History of Norway* (1752–3) by Erik Ludvigsen Pontoppidan, Bishop of Bergen, where he discusses at some length the fabulous animals of the northern seas which seem to have some foundation in fact. After dealing with the mermaid and the sea-serpent he tackles what is 'incontestibly the largest Sea-monster in the world'.

> It is called *Kraken, Kraxen*, or, as some name it, *Krabben*, that word being applied by way of eminences to this creature. This last name seems indeed best to agree with the description of this creature, which is round, flat, and full of arms, or branches. Others call it also *Horven*, or *Sœ-horven*, and some *Anker-trold*.

He adds that he has not found this creature described by any other writer, but what they say of 'floating islands, as they apprehended them to be (a thing improbable that they should exist in the wild tumultuous ocean) ... will be found applicable without any hyperbole to this creature'. He continues:

> Our fishermen unanimously affirm ... that when they row out several miles to Sea, particularly in the hot Summer days, and by their situation ... expect to find 80 or 100 fathoms water, it often happens that they do not find above 20 or 30, and sometimes less. At these places they generally find the greatest plenty of Fish, especially Cod and Ling ... by this they judge that the Kraken is at the bottom. They say this creature causes these unnatural shallows ... These the fishermen are always glad to find ... There are sometimes twenty boats or more got together, and throwing out their lines at a moderate distance from each other; and the only thing they then have to observe is, whether the depth continues the same, which they know by their lines, or whether it grows shallower by their seeming to have less water. If this last be the case, they find that the Kraken is raising himself near the surface ... they immediately leave off fishing, take their oars, and get away as fast as they can. When they have reached the usual depth of the place, and find themselves out of danger, they lie upon their oars, and in a few minutes after they see this enormous monster come up to the surface of the water; he there shows himself sufficiently, though his whole body does not appear, which in all likelihood no human eye ever beheld (excepting the young of this species ...) its back or upper part, which seems to be in appearance about an English mile and a half in circumference, (some say more, but I chuse the least for greater certainty) looks at first like a number of small islands, surrounded with something that floats and fluctuates like sea weeds ... at last several bright points or horns appear, which grow thicker and thicker the higher they rise above the surface of the water, and sometimes they stand up as high and large as the masts of middle-siz'd vessels.
>
> It seems these are the creature's arms, and, it is said, if they were to lay hold of the largest man-of-war, they would pull it down to the bottom. After this monster has been on the surface of the water a short time, it begins slowly to sink again, and then the danger is as great as before, because the motion of this sinking causes such a swell in the sea, and such an eddy or whirlpool, that it draws down everything with it ...
>
> As this enormous Sea-animal in all probability may be reckon'd of the Polype, or of the Star-fish kind ... it seems that the parts which are seen rising at its

> pleasure, and are called arms, are properly the tentacules ... With these they move themselves, and likewise gather their food.
>
> Besides these, for this last purpose the great Creator has also given this creature a strong and peculiar scent, which it can emit at certain times, and by means of which it beguiles and draws other Fish to come in heaps about it ... a great many old fishermen ... observe, that for some months the Kraken ... is continually eating, and in other months he always voids his excrements. During the evacuation the surface of the water is coloured with the excrement, and appears quite thick and turbid. This muddiness is said to be so very agreeable to the smell or taste of other Fishes, or to both, that they gather together ... over the Kraken: he then opens his arms, or horns, seizes and swallows his welcome guests ...

Here again we have the island-beast, though unlike some of its versions where it attracts its prey by the scent of its baited breath, its excrement is used for the purpose. No doubt this story was inspired by masses of ambergris being found floating on the sea. But science had not yet discovered that this mysterious substance is formed in the bowels of sperm-whales when they fail properly to digest the squids they have eaten. Pontoppidan, to do him justice, is not positive about the truth of this story. The *kraken*'s existence is another matter, for he has done more than merely listen to a few fishermen's tales and gives a circumstantial account of how in 1680 a 'young and careless' *kraken* came ashore at Alstadhaug and 'entangled himself in some openings or clefts in the rock, and therein stuck so fast, and hung so unfortunately, that he could not work himself out, but perished and putrefied on the spot.'

The best evidence of Pontoppidan's good faith—and of that of his informants—is that he does not make the *kraken* out to be a monster of evil, despite its prodigious strength.

> The Kraken has never been known to do any great harm, except that they have taken away the lives of those who consequently could not bring the tidings. I have never heard but one instance mentioned, which happened a few years ago near Fridrichstad ... two fishermen accidentally, and to their great surprise, fell into such a spot in the water ... full of thick slime, almost like a morass. They immediately strove to get out of this place, but they had not time to turn quick enough to save themselves from one of the Kraken's horns, which crushed the head of the boat so, that it was with great difficulty they saved their lives on the wreck, tho' the weather was as calm as possible.

The only really implausible part of the bishop's account is the beast's prodigious size. A mile and a half in circumference is really too much, not merely for commonsense but for the strictly mechanical possibilities of animal structure. Nerves 300 yards long just would not work. Yet, in fact, he says that its 'whole body does not appear' but 'looks at first like a number of small islands'. Squids are known to be extremely gregarious, so might not the *kraken* be a whole shoal of giants? Be that as it may, one of the most eerie features of the whole problem is that modern scientists have quite unconsciously followed Pontoppidan in their choice of an explanation of an apparent false bottom to the ocean. During the war the Americans discovered what came to be called the 'deep scattering layer', a definite discontinuity in the sea between 150 and 250 fathoms down, which reflected ultra-sonic waves and was shown on their echo-sounders. Subsequent research showed that this layer moved nearer the surface at night and sank again in the daytime. It must therefore consist of living animals whose movements were governed by light. And one theory was that this layer consisted of gigantic shoals of small squids. This has yet to be confirmed. But it would certainly prove a great triumph for the legend if it turned out to be true.

The first detailed account of a washed-up squid of great size is in the Icelandic Annals of Björn of Skardsa.

> (1639). In the autumn there was thrown on the sands of Thingöre in the land of Hunevand, a strange creature or sea monster, the body of which, as long and thick as a man's, had seven tails, each 4 feet long. These tails were covered with buttons like eyeballs, with golden pupils. Besides these seven tails, there was one very long one which was 16 to 18 feet long. It had no bone nor gristle in its body ... There was no sign of the head except one or two gill-covers near the seven tails.

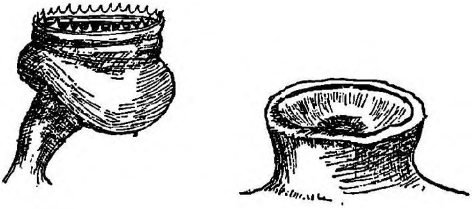
When Eggert Olafsen and Biarne Povelsen came upon this account more than a hundred years later they realized that it was a large cephalopod. The description of the peduncular suckers as like eye-balls is in fact an excellent if bizarre comparison.

This monster is still a long way from being a true giant. A somewhat longer monster appeared in Ireland in 1673 and was much more sensationally exploited by a showman called James Steward who exhibited a picture of it and some parts of its body. It was described thus:

> This monster was taken at Dingle-I-Cosh in the County of Kerry, being driven up by a great storm in the month of October last, 1673; having two heads, one great head (out of which sprung a little head two foot or a yard from the great head) with two great eyes, each as big as a pewter dish, the length of it being about nineteen foot, bigger in the body than any horse ... having upon the great head ten horns, some of six, some of eight or ten, one of eleven foot long, the biggest horns as big as a man's leg, the least as his wrist, which horns it threw from it on all sides. And to it again to defend itself having two of the ten horns plain, and smooth, that were the biggest and middle horns, the other eight had one hundred crowns a-piece, placed by two and two on each of them ... each crown having teeth, that tore anything that touched them, by shutting together the sharp teeth, being like the wheels of a watch. The crowns were as big as a man's thumb or something bigger, that a man might put his finger in the hollow part of them, and had in them something like a pearl or eye in the middle; over this monster's back was a mantle of bright red colour, with a fringe round it, it hung down on

> both sides like a carpet on a table, falling back on each side, and faced with white, the crowns and mantle were glorious to behold: This monster had not one bone about him, nor fins nor scales, or feet, but had a smooth skin like a man's belly. It swoom by the lappits of the mantle; the little head it could dart forth a yard from the great, and draw it in again at pleasure, being like a hawk's beak, and having in the little head two tongues ...

Steward clinched his story by showing two 8-foot arms and the little extra 'head' which he had in his box. It had, of course, no sign of the eyes which have been shown on the picture reproduced as Plate 2, and was merely the beast's pharynx. The vivid description of the 'crowns' applies exactly to a squid's suckers (see Fig. 5).



5. Suckers of squid (*left*) and octopus (*right*)

Two much smaller monsters—big squids but not giant ones—were also washed up in Holland and Germany which, with the one at Alstadhaug, makes five at the time that Pontoppidan wrote. But they were little publicized, and the bishop's *kraken* was so huge that there was some excuse for thinking it could not have the slightest foundation in fact.

When Abbé Pernetty accompanied Bougainville in 1763 and 1764 to the Malouines Islands, as the Falklands were then called, no one disputed his exaggerated accounts of the Patagonian giants, but they smiled at his stories of giant squids:

> According to the sailors of the South Seas, the 'cornet' is the biggest fish in the sea. It seizes its prey with movable barbels which it has on the end of its nose. These sailors also say that it fastens and hooks itself on to ships with these same barbels and climbs into the rigging: and that if it does so at night without being noticed it makes the ship heel on her side under its vast weight and capsize ... Our captain and his brother ... assured me of this.

The illustration accompanying this text makes it quite clear that the 'cornet' in question is a squid—*encornet* is still used as a name for it in French. The captain and his brother admitted they had not themselves eaten any that were more than about 150 pounds in weight. But as this is 7½ times the maximum weight in the zoology manuals at the time, and their total length would be about 10 feet, this was certainly news.

Another abbé, Juan Ignacio Molina, who had studied South American fauna, cast doubt on Pernetty's larger claim while admitting his smaller one. 'The sailors,' he said, 'exaggerate the size and strength of this animal, but it is sure that those taken in the seas of Chile do not weigh less than 150 pounds.'

But Thomas Pennant, the naturalist who is perhaps best known for his correspondence with the great Gilbert White, has much more surprising things to say about a cephalopod which he thinks, probably wrongly, to be an octopus:

> In hot climates these are found of an enormous size. A friend of mine, long resident among the Indian isles, and a diligent observer of nature, informed me that the natives affirm, that some have been seen two fathoms broad over their centre, and each arm nine fathoms long. When the Indians navigate their little boats, they go in dread of them; and lest these animals should fling their arms over and sink them, they never sail without an axe to cut them off.

In 1783 Dr Schwediawer in his work on the origin of ambergris mentions that a New England captain with long experience of whaling in the South Seas, told him that he had once caught a sperm-whale which had in its mouth a cephalopod's arm which was 27 feet long, even though it was not whole, one end having been destroyed by digestive juices. The size of this arm, thought Dr Schwediawer, showed that fishermen were right in thinking this was the largest fish in the ocean.

A decade or so later this passage came to the notice of an enthusiastic young French naturalist, Pierre Denys de Montfort, who, after the Revolution, became plain Citizen Denys-Montfort, for he was one of a lost generation whose fate was blighted by that great upheaval when the Republic had 'no need of scientists'. It so happened that a community of American whalemen had been established at Dunkirk by Calonne to replace the French whaling industry which had died out. Denys de Montfort therefore hastened to Dunkirk to see whether any of the captains there could tell him any more. He was successful.

> One of these captains, named Benjohnson, told me he had harpooned a male whale, which, besides its very prominent penis placed under the belly, seemed to have another one coming out of its mouth; this surprised him greatly, and also the sailors, and when they had made the whale fast to the ship he had them put a hook through this long round mass of flesh which they hauled in with several running nooses ... They could hardly believe the evidence of their eyes when they saw that this fleshy mass, cut off at both ends and as thick as a mast at the widest point, was the arm of an enormous octopus (or 'quid'), the closed suckers of which were larger than a hat; the lower end seemed newly cut off, the upper one must

> have been done some time before it was caught, for it was scarred, and surmounted by a sort of extension as thick and long as a man's arm. This huge octopus's limb, exactly measured with a fishing line, was found to be 35 feet long, and the suckers were arranged in two rows, as in the common octopus. What then must have been the length of arm which had been cut off at its upper extremity where it was no less than 6 inches in diameter?

Denys de Montfort thought about 10 feet must have been cut off the upper end for it to have tapered to a point, and 10 or 20 feet off the lower end, because it had clearly been cut off beyond the 'umbrella membrane', making a total length of around 80 feet. But many squids have relatively little 'umbrella membrane', so this length is exaggerated; moreover the English name, 'quid', that he quotes implies that it was a squid and not an octopus. Denys de Montfort tells another even stranger story:

> Another American captain called Reynolds told me ... that one day, having harpooned a whale, which had been struck by two harpoons, one going in behind the ear, and could not run for long, and was almost at once at its last gasp, they saw floating on the surface of the water a long fleshy body, red and slate-coloured, which they took to be a sea-snake, and which frightened even the sailors who rowed the whaleboats.

But one man saw that it had no head and seemed dead. It was hauled aboard and proved to be 'the cut-off arm of an enormous octopus which they recognized by the huge suckers ... which were as big as a plate at the large end'. The thick end was 2 feet 6 inches in diameter and the whole arm 45 feet long.

This enormous arm—perhaps the largest ever reported –is also almost certainly a squid's. The reddish colour is like that of the Dingle-I-Cosh monster's mantle, and we shall find it common in very big squids, though the cephalopods are able to change colour with such surprising ease that one cannot really define it.

Encouraged by these whalemen's accounts Denys de Montfort wrote in his *Histoire naturelle des Mollusques*, published in 1802, that cephalopods are 'the most enormous animals that exist on the globe'. There were two kinds of giants, the 'colossal octopus' and the 'kraken octopus'. He should have realized from all the evidence that these giants were really squids, but obstinately refused to do so. Yet this is not what has brought him into disrepute. It was his fondness for the fantastic—though often well-founded—stories that he used to support his argument which led him to be accused of gullibility, exaggeration and worse.

One of his most sensational pieces of evidence, which, though exaggerated, seems founded on a real event, is a votive picture which he said was in St Thomas's chapel in St Malo. It depicts the terrible plight of a ship off

Angola when a frightful monster rose out of the sea, winding its arms around the rigging 'right up to the tops of the masts', and began to haul the ship down to capsize and sink her. The terrified seamen made a vow to St Thomas that they would make a pilgrimage if he would save them. And with the saint's help, seconded by their own cutlasses and axes with which they cut off the arms of this monstrous animal, they at last got free. As soon as the ship arrived at St Malo, without even embracing their wives or kissing their children, they hastened to give thanks for their deliverance at the chapel of St Thomas, where, as soon as it could be painted, a votive picture of their adventure was hung.

> Thanks to this devotion and religious faith [wrote Denys de Montfort] we have the tradition and picture of this event, which we shall make use of, since it constitutes an established fact which lies within the province of natural history which adopts all materials the fact and authenticity of which cannot be disputed.

Unfortunately he was rash enough to publish his own copy of the picture, the 'fact and authenticity' of which one can certainly dispute. Indeed it is clearly the least authentic part of the whole incident, having been much overdramatized by an artist who was not present (see Plate 3). The arms of so monstrous a beast would have been more than 10 feet thick, and even with the help of St Thomas no sailor could have cut through them.

The most circumstantial of Denys de Montfort's reports comes from Jean-Magnus Dens, a Danish sea-captain who had retired to Dunkirk and who had met a monster in latitude 15° S. some distance off West Africa. The ship being becalmed, he had lowered some planks over the side so that the sailors could scrape and clean the side. Suddenly what he called an *ankertrold* (or 'anchor-troll') seized two men and their cradle and pulled them under water. A third man leapt into the rigging, and it tried to seize him too, but its arm wrapped itself round the shrouds. The crew rushed to his help and cut off the arm, though not before the man had fainted away. Meanwhile no less than five harpoons had been driven into the body of the beast, for the captain still had hopes of saving the other two men. But after a heroic struggle, during which four of the lines broke, he had to give up the attempt. The man who had been in the shrouds died raving that night.

> The part of the arm which had been cut off the octopus's body, and which was still tangled with the ratlines on the shrouds, was nearly as thick at the bottom as a mizzen-mast spar and ended in a very sharp point, covered with capsules or suckers as large as a ladle; it was 25 feet long, and as the arm had not been cut off at the bottom, because the monster had not showed its head above water, the captain reckoned that the whole arm must have been 35 to 40 feet long.

Although Captain Dens had called it a squid, Denys de Montfort was convinced that it was an octopus, and he took the same line about the *kraken*, though he cited Bosc, who called it a cuttlefish, and gave some more reports from Norway. A Captain Andersen had told him that he had found an arm 25 feet long on the rocks near Bergen, which was so thick he could only just embrace it.

What did Denys de Montfort think was the difference between the 'colossal octopus' and the 'kraken octopus'? The first, he said, was an evil beast, 'which Nature has given a propensity for destruction and slaughter,' and which he thought capable of sinking ships, whereas 'it seems the *kraken* has more peaceful habits'. There seems little justification for this distinction, which must be due more to differences between the Latin and the Scandinavian temperaments than any racial difference in squids.

There is even less justification for the scorn with which Denys de Montfort and his work is treated by most scientists. His 'colossal octopus' was treated as a complete invention, he was thought to be mad, it was rumoured that his lies had ended in forgery and his being committed to the galleys, and quite recently he was described in *The Times* as 'an unscrupulous rascal at one time in the employ of the Paris Museum'.

Yet besides his unfinished natural history of molluscs he wrote two volumes of a *Conchyliologie Systématique* which Professor Léon Vaillant thought very highly of, and in which he was responsible for creating no less than twenty-five new genera which remain on our lists.

Indeed the only scientist at the time who accepted his conclusions about a giant octopus was a Lorenz Oken, a brilliant German naturalist who was also thought to be something of a crackpot. This frosty reception had its effect. Denys de Montfort did not finish either of his great works himself. He took refuge in bitter jokes, and when he remarked, 'If my colossal octopus is accepted, I shall make it sink a whole squadron in the second edition,' this was solemnly taken as evidence that he was a lying knave. He dwindled into obscurity, wrote a book on bee-keeping, did a hack phrase-book, and was last seen as a shabby pauper selling shells to a Paris dealer, before being found 'dead and destitute in a Paris street in 1820 or 1821'. Such was the fate of a great French naturalist who dared to believe in facts that others would not accept.

The next zoologist to tackle the question was the Dane, Johan Japetus Steenstrup, in the middle of the nineteenth century. Besides the evidence I have already mentioned, he found in the diary of the Icelandic explorer, Sveinn Paulsson, an account of a *Kolkrabbe* washed up at Arnarnæsvick in 1790, the longest tentacles of which were 18 feet long, and the body 21 feet long without the head and so thick that a grown man could just span it with outstretched arms. An odd detail was that the fishermen who had been cutting it up for cod-bait said that there were *four* long tentacles out of the total ten. But no doubt the four consisted of the two long ones cut off short and the two longest of the other eight. The truly gigantic dimensions are very soberly reported, though Steenstrup found reasons—which seem unjustifiable to me—for questioning them. We shall find an even larger authenticated specimen later.

In 1802 the brilliant young naturalist on the *Géographe* expedition, François Péron, saw a live squid off Tasmania with arms 6 or 7 feet long and 7 or 8 inches thick. Beating on the surface they looked like 'so many enormous reptiles'.

Jean Quoy and Joseph Gaimard, the zoologists on the *Uranie*'s voyage round the world in 1817–20, tell how,

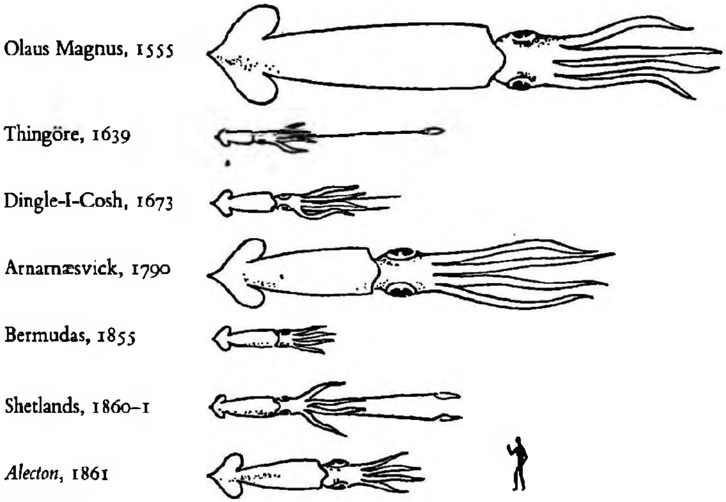
> In the Atlantic Ocean, near the equator, in calm weather, we collected the remains of a huge squid; what the birds and sharks had left still weighed 100 pounds, and it was only a longitudinal half, entirely without its tentacles, so that one can reckon without exaggeration that the entire mass of the animal must have weighed 400 pounds.

There were other, less detailed, reports of huge squids in the ocean, and the existence of a big, though not giant, species which was clearly identical with Aristotle's *teuthos* was established in the Mediterranean. There were remains of giant squids in British and Dutch museums, but it was Steenstrup who finally gave the animal its scientific christening. He gave a paper on the subject to the Society of Scandinavian Naturalists in 1847. This would no doubt have been forgotten, or suffered the obloquy of Denys de Montfort, had not the sea thrown up the remains of a giant squid on the beach at Aalbaek in Jutland in 1853. As usual it was cut up as fish-bait, but the pharynx, as big as a child's head and with a beak 4½ by 3¼ inches in size, came into Steenstrup's hands and enabled him to publish a description of what he called *Architeuthis monachus* in 1857.

The giant squid was now official. A few specialists knew about it. But the zoology manuals said little or nothing on the subject. In the relevant volume of Chenu's *Encyclopédie d'Histoire naturelle* of 1858 it is cautiously admitted that there may be specimens nearly six feet long in the Pacific. The *kraken* had begun as a legend, and a legend they were determined it should remain. Yet if there were not a germ of fact the legend would not have grown up in the first place.

There were certain facts which it was not possible to consign to the realm of legend. Thus on 30 November 1861 the French gunboat *Alecton* saw a floating mass in the sea 40 leagues from Teneriffe. The commander, Lieutenant Frédéric Marie Bouyer, was curious to know what it was. He found that it was what he called a giant octopus (confusion was very general at the time) and tried to capture it as it swam away on the surface. Bullets seemed to have little effect, and only after long pursuit were they able to get a harpoon into its viscous body. A noose was put round it, but slipped until it reached the tail fins. When they tried to hoist it aboard, the body broke and all but the end of the tail fell back into the water (see Plate 4).

It was a gigantic squid. From the tip of its tail to its terrible parrot's beak it was between 15 and 18 feet long, without counting its eight arms which were a further 5 or 6 feet long, making 20 to 24 feet in all. The two long tentacles were apparently missing and the monster seemed to be wounded or dying. It smelled strongly of musk. Its colour was brick-red, and the staring eyes were big as plates. The mouth was about 18 inches across.



6. Comparative sizes of giant squids described before 1870

Lieutenant Bouyer would have liked to lower a boat to continue the struggle but felt that this would be risking his men's lives unjustifiably. When the ship reached Teneriffe he showed the French consul the remaining piece of tail and sent an official report to the Navy Minister which, together with the consul's letter, and a sketch drawn by one of the *Alecton*'s officers, was presented at the next meeting of the French Academy of Sciences on 30 December 1861. The scientists' scepticism should have been shaken.

Nevertheless Arthur Mangin took the *Alecton's* monster as a cue to demonstrate that the giant squid was mechanically and physiologically impossible. It was, he said, in the strict sense of the word, a monster. Then what had the commander of the *Alecton* seen? He thought their account 'true in some respects, because it was affirmed by serious and honourable men'. But he then proceeded to discredit it. Why had not the animal dived? Why had not the piece of tail fallen back into the water? Had anyone dissected the tail? Had not the sailors been 'mistaken'? Until one wonders how he could admit that it was true even 'in some respects'. This he did in the most ingenious and back-handed fashion. Captain Frederic Smith had claimed that he had seen what he thought at first was a sea-serpent from the *Pekin* in 1848, but it had proved to be an enormous piece of seaweed. This was enough for Mangin to explain everything:

> It is very possible that the fragments collected by several travellers, and presented by them as coming from enormous octopuses or squids are in reality the remains of a sea-plant. The soft consistency of these fragments of more or less voluminous size, their viscous surface and brown or reddish colour, the strong smell they give off, are all characteristics which belong equally to a large number of the products of the ocean, and there is no reason to attribute them to an animal substance rather than to vegetable matter.
>
> These considerations, and others as well, which a little reflection will no doubt suggest to the reader as well as to ourselves, will suffice, I think, to persuade the wise and especially the man of science, not to admit into the catalogue those stories which mention extraordinary creatures like the sea-serpent and the giant squid, the existence of which would be in some sort a contradiction of the great laws of harmony and equilibrium which have sovereign rule over living nature as well as senseless and inert matter.

In other words, Lieutenant Bouyer and his men were all liars; and Sir Joseph Banks, Quoy, Gaimard, Steenstrup, the keepers of the Dutch and British Museums and many other scientists were all so ignorant that they could not tell the difference between an animal and a vegetable. 'A little reflection' should have suggested that there must be something wrong with these 'great laws of harmony and equilibrium'.

I have dwelt on Mangin's absurd statement because it is a beautiful example, in its most inane form, of the kind of argument used to discredit factual observations concerning the subject of this book, the sea-serpent. Yet its absurdity did not occur to all the men of science at the time, and *Architeuthis* was still under a cloud.

Then from 1871 to 1879 a whole series of giant squids began to expire on the beaches of Newfoundland and Labrador. Dr A. S. Packard, editor of the *American Naturalist*, tells in that journal how he came upon a brief account in the *Cape Ann Advertiser* of the body of a huge squid floating off the Grand Banks. Dr Packard followed this up, and found that in October 1871 the schooner *B. D. Haskins*, Captain Campbell, had seen the monster and lowered a boat to look at it. The mate had measured it with a rule and found it was 15 feet long and 4 feet 8 inches in circumference. It was thus rather slim for its length. The arms had been partly eaten and were only 9 or 10 feet long. Their circumference was reckoned at 22 inches. One of the fishermen had cut off its beak but refused to part with it. Dr Packard was, however, able to send a photograph to Steenstrup for identification, together with a wood-engraving of another beak 4½ inches long found in a sperm-whale's stomach and presented to the Essex Institute by Captain Atwood of Provincetown.

In late October 1873 a fisherman called Theophile Piccot had a battle with a huge squid off the eastern point of Great Bell Island in Conception Bay, not very far from St John's, Newfoundland. Fortunately his son Tom had cut off one of the tentacles with an axe and Alexander Murray of the Geological Commission of Canada had preserved part of it in alcohol. According to Murray, Piccot said that the tentacle had been cut off at least 10 feet from the body. When he got back to Portugal Cove 6 feet were cut off his trophy, leaving 19 feet which shrank a further 2 feet when pickled in strong brine. The total original length would thus have been 30 to 35 feet. At the end, for about 2 feet 6 inches was a sort of narrow pointed paddle with a maximum diameter of 6 inches and covered with many toothed suckers. Thus the lump at the end of a giant squid's tentacle alone was bigger than a good-sized ordinary squid!

A more detailed account of this event was given by the Rev. Moses Harvey of St John's, who had heard of it direct from the fishermen. According to him, Piccot reckoned that the beast was three times as long as his 20-foot boat, was not less than 5 feet across, and 10 feet at the tail fins. These dimensions have been thought to be very much exaggerated. But if the length is that of the whole beast including the retractile tentacles 30 to 35 feet long, which would probably have had a body about 12 to 15 feet long, we have a total of 42 to 50 feet, which is not far short of 60.

Murray also wrote of two other specimens:

> The Rev. Mr. Gabriel ... who formerly resided at a place called Lamalein [Lamaline] on the south coast of the island, states that, in the winter of 1870 and 1871, two entire cuttle or devil-fish were stranded on the beach near that place, which measured respectively forty and forty-seven feet.

And in another letter he said that in November 1873 a smaller, but nonetheless considerable squid had been caught in Logie Bay, near St John's. Its total length was 32 feet, of which 7 feet 9 inches was body and head, and 24 feet 3 inches was tentacles. The arms were 6 feet long. The bulk of the beast was less than 14 feet long. All the same it took some dispatching, having been entangled in a herring net, and the fishermen slashed at it for half an hour with hatchets and cutlasses, hacking the head, eyes, siphon and the front part of the mantle to shreds before they killed it. Harvey, after failing with brine, preserved parts of this beast in spirits.

Murray's second letter tells a much more sensational though unverifiable story:

> A very respectable person by the name of Pike, informs me that he has seen many of these gigantic squids upon the coast of Labrador; and that he measured the body of one eighty feet from beak to tail. He also states that a certain Mr. Haddon, a school inspector of this place, measured one ninety feet. He tells me, moreover, that the monsters are edible.

Despite this matter-of-fact detail, these reports have never been accepted by such experts on the subject as Professor Addison Verrill, because the specimens are very much larger than any that have been photographed or partially preserved. This might seem prudent on the part of a scientist, were it not that Verrill accepts many other no more verifiable reports of squids simply because they are smaller than those that had been duly measured.

When Professor Verrill of Yale read Packard's article he went to Newfoundland and studied the remains that had been preserved. Professor Baird of the Smithsonian Institution sent him the jaws and two suckers of a squid about 30 feet long which was washed up at some unspecified date in Bonavista Bay, also in Newfoundland, and had been collected by the Rev. Mr Murin. The Rev. Moses Harvey reported another stranding in Bonavista Bay in December 1872, and Verrill wondered if it might not be the same squid. But Harvey made the body 14 feet long with 10-foot arms as thick as a man's thigh and tentacles 32 feet long. The biggest suckers on the arms were 2½ inches in diameter, and could not have come from a specimen less than 45 feet overall.

Professor Verrill also learnt of the longest, though not the biggest, of this harvest of squids when he was in Newfoundland. R. T. Bennett of English Harbour wrote:

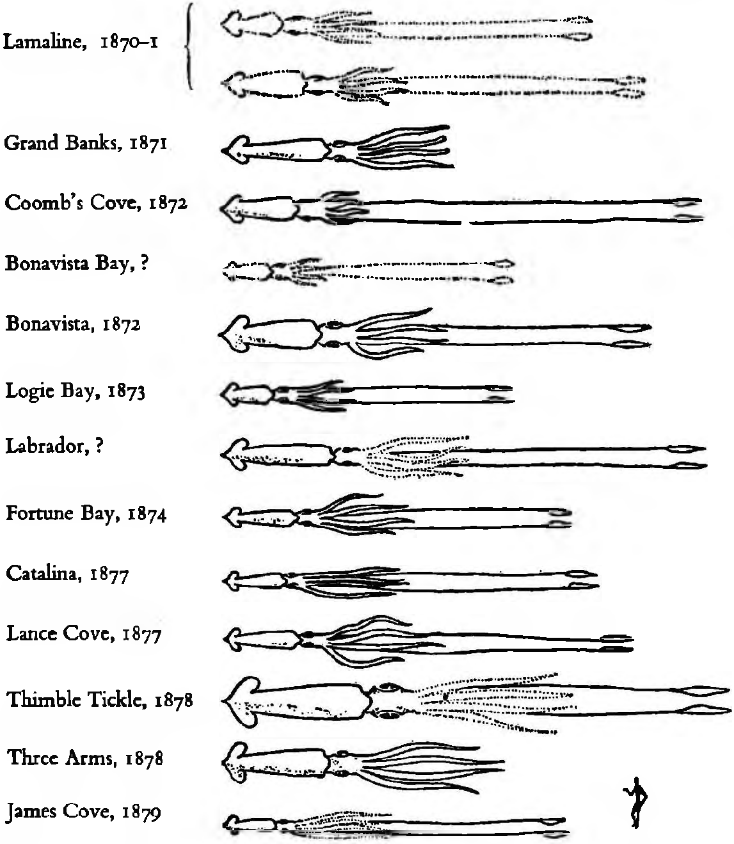
> Three days ago, there was quite a large squid run ashore at Coomb's Cove, and some of the inhabitants secured it. The body measured 10 feet in length and was nearly as large round as a hogshead. One arm was about the size of a man's wrist, and measured 42 feet in length, but about 9 inches in diameter, very stout and strong. The skin and flesh were 2·25 inches thick, and reddish inside as well as out. The suction cups were all clustered together, near the extremity of the long arm, and each cup was surrounded by a serrated edge, almost like the teeth of a hand-saw. I presume it made use of this arm for a cable, and the cups for anchors, when it wanted to come to, as well as to secure its prey, for this individual, finding a heavy sea was driving it ashore, tail first, seizing hold of a rock moored itself quite safely until the men pulled it on shore.

Verrill published a first note about all these specimens in the *American Naturalist* in 1874. Meanwhile they continued to run ashore. Dr D. Honeyman of Halifax, Nova Scotia reported that an eye-witness had told him of a squid 52 feet long caught at West St Modeste, Strait of Belle Isle, Labrador. Though it was the same length as that at Coomb's Cove its body must have been much bigger: its longest tentacle was only 37 feet, but its body was 15 feet. In the winter of 1874–5 a giant squid was washed up at Harbour Grace but was destroyed without being measured. This was very apt to happen. Thus in December 1874 a specimen nearly 40 feet long, including its 25-foot tentacles, was washed up at Grand Bank in Fortune Bay, but by the time George Sims examined it a few hours later the fishermen had already cut it up and started to feed large chunks to their dogs. Captain J. W. Collins of the schooner *Howard* said that he saw a large number of giant squids floating on the surface on the Grand Banks. Most were dead and already somewhat eaten by fish and gulls. One had a mantle 15 feet long and another had 36-foot tentacles. Some fifty or sixty of these carcases were cut up by fishing boats for cod-bait. The squid washed up on 20 November 1876 at Hammer Cove in Notre Dame Bay was destroyed by gulls and foxes before man could even get at it.

A specimen of moderate size was washed up alive on Catalina beach in Trinity Bay on 24 September 1877 after a terrible storm. It was 40 feet long of which only 9 feet 6 inches was body and all the rest tentacles. The arms were 11 feet long and 17 inches across at the base, and the eyes were 8 inches in diameter. It was exhibited in brine at St John's and sent for the purpose to New York, only to end its days in the hands of an ignorant taxidermist who put it together with its limbs and eyes all in the wrong places. A month later another one was washed up twenty-five miles further north and was immediately cut up and used as fish-manure. On 21 November a third specimen was thrown alive on the beach at Lance Cove, Trinity Bay, by a spring tide and heavy swell. It was 44 feet long, 11 feet being body, and 33 feet tentacles. The arms were about 12 feet long and as thick at the root as a man's thigh.

The following winter two really gigantic squids appeared in Newfoundland, the first at Thimble Tickle on 2 November 1878 and the second at Three Arms on 2 December. The second had a mantle 15 feet long and no less than 12 feet in circumference. Its arms were 16 feet long and as thick as a man's thigh. No mention is made of the tentacles, but even without them it would have been over 30 feet long.

The first one was even bigger. Indeed it is the biggest specimen ever accepted by science, yet even so it is smaller than the one recorded in Iceland in 1790. Here is the letter that the Rev. Moses Harvey wrote to the *Boston Traveller* about its capture:


Lamaline, 1870–1
Grand Banks, 1871
Coomb's Cove, 1872
Bonavista Bay, ?
Bonavista, 1872
Logie Bay, 1873
Labrador, ?
Fortune Bay, 1874
Catalina, 1877
Lance Cove, 1877
Thimble Tickle, 1878
Three Arms, 1878
James Cove, 1879

7. Comparative sizes of the chief *Architeuthis* in Newfoundland, 1870–80

> On the 2nd day of November last, Stephen Sperring, a fisherman residing in Thimble Tickle ... was out in a boat with two other men; not far from the shore they observed some bulky object, and, supposing it might be part of a wreck, they rowed toward it, and, to their horror, found themselves close to a huge fish, having large glassy eyes, which was making desperate efforts to escape, and churning the water into foam by the motion of its immense arms and tail. It was aground and the tide was ebbing. From the funnel at the back of its head it was ejecting large volumes of water, this being its method of moving backwards ...
>
> Finding the monster partially disabled, the fishermen plucked up courage and ventured near enough to throw the grapnel of their boat, the sharp flukes of

> which, having barbed points, sunk into the soft body. To the grapnel they had attached a stout rope which they had carried ashore and tied to a tree, so as to prevent the fish from going out with the tide ... At length it became exhausted and as the water receded it expired.
>
> The fishermen, alas! knowing no better, proceeded to convert it into dog's meat. It was a splendid specimen—the largest yet taken—the body measuring 20 feet from the beak to the extremity of the tail ... The circumference of the body is not stated, but one of the arms measured 35 feet. This must have been a tentacle.

From the dimensions of other specimens we can calculate that this monster's eyes must have been 18 inches across, with a beak 9 inches in diameter, arms as thick as a man's body and with the biggest suckers on the long tentacles nearly 4 inches across.

After this the remaining strandings in Newfoundland were comparatively small fry: arms 8 feet long at Brigus in Conception Bay and a 38-foot specimen in James Cove.

On the strength of all this Professor Verrill published the results of his researches in 1879, showing incidentally that there were two different species, one elongated with arms as long as the body, and the other thicker with short arms.

One may wonder why *Architeuthis* chose this relatively small area for its apparently senseless mass suicide. A possible explanation may lie in the 'cold wall' where the Gulf Stream and the Labrador Current meet. G. C. Robson has shown that *Architeuthis* seeks a temperature of 10° C. Its natural reaction when it finds a lower temperature is to rise near the surface into warmer water. But if it crosses the 'cold wall' it finds the water too cold even on the surface and there is nothing it can do, and it begins to die of cold. The full explanation may not prove quite so simple, but this gives us a clue.

Meanwhile there was more news of *Architeuthis* from elsewhere, smaller specimens from Japan and others from the Aleutians. W. H. Dall wrote:

> There can be no doubt whatever that some cephalopods in the warmer seas attain an enormous bulk as well as length. Captain E. E. Smith, an experienced sperm-whaler, and a careful and intelligent observer, informs me that he has seen portions of 'squid' arms vomited up by whales in their death-agony, as large as a 'beef-barrel', with suckers on them 'as big as a dinner plate'. I have no doubt of the correctness of this statement.

Henry Hanks of the Microscopical Society of San Francisco said he had seen a cephalopod near the surface of the South Pacific, 'as large as the schooner!' These statements were much ridiculed by G. W. Tryon in his *Manual of Conchology* (1879–91), but, as we shall see, without much justification.

The squid became news in France, when an expedition arrived at the lonely island of St Paul in the Indian Ocean just as a 23-foot specimen was washed up, and photographs and some parts of its body were presented at the French Academy of Sciences. Finally *Architeuthis* returned to Norway, the land of the *kraken*, whence we have no written record since Pontoppidan's young specimen at Alstadhaug in 1680. Unfortunately we have no details of this 1874 stranding except that it was in Folden fjord. Nor have we much information about the other three stranded in Norway before the end of the century. Fortunately an arm, 27 feet long, of one stranded in Olafsfjord, Iceland in 1879 was preserved in Copenhagen, where I was able to examine it. But generally speaking strandings may often go unrecorded if there is no naturalist on the spot at the time.

In 1875 an Irish zoologist, A. G. More, reported a really colossal squid caught off Connemara. Sergeant Thomas O'Connor of the Royal Irish Constabulary reports:

> On Monday last [25 April], the crew of a curragh, consisting of three men, met with a strange adventure northwest of Boffin Island. Having shot their spillets ... they observed to seaward a great floating mass, surrounded by gulls; they pulled out, believing it to be a wreck, but, to their great astonishment, found it to be a cuttle-fish of enormous proportions, and lying perfectly still, as if basking on the surface of the water. A knife was the only weapon on board. The cuttle is much prized as a bait for coarse fish, and the crew resolved to secure at least a portion of it. Considering the great size of the monster, and knowing the crushing and holding powers of the arms, open hostility could not be resorted to, and the fishermen shaped their tactics differently. Paddling up with caution, a single arm was suddenly seized and lopped off. The cuttle, hitherto at rest, became dangerously active now, and set out to sea at full speed in a cloud of spray, rushing through the water at a tremendous rate. The canoe immediately gave chase, and was up again with the enemy after three-quarters of a mile. Hanging on the rear of the fish, a single arm was attacked in turn, while it took all the skill of the men to keep out of the deadly clutch of the suckers. The battle thus continued for two hours ... Five miles out in the Atlantic, in their frail canvas craft, the boatmen still slashed away ... By this time the prize was partially subdued ... Such as remained of the ten great arms slashed around through the air and water in a most dangerous but unavailing fashion. The trunk of the fish lay alongside, fully as long as the canoe, while, in its extremity, the mutilated animal emitted successive jets of fluid, which darkened the sea for fathoms around. The head at last was severed from the body, which was unmanageable from its great weight, and sank like lead to the bottom of the sea. Of the portions ... taken ashore, two of the great arms are intact, and measure 8 feet each in length, and 15 inches round the base. The two tentacles attain a length of 30 feet, the mandibles are about 4 inches across. The head, devoid of all appendages, weighed about 6 stone, and the eyes were about 15 inches in diameter.

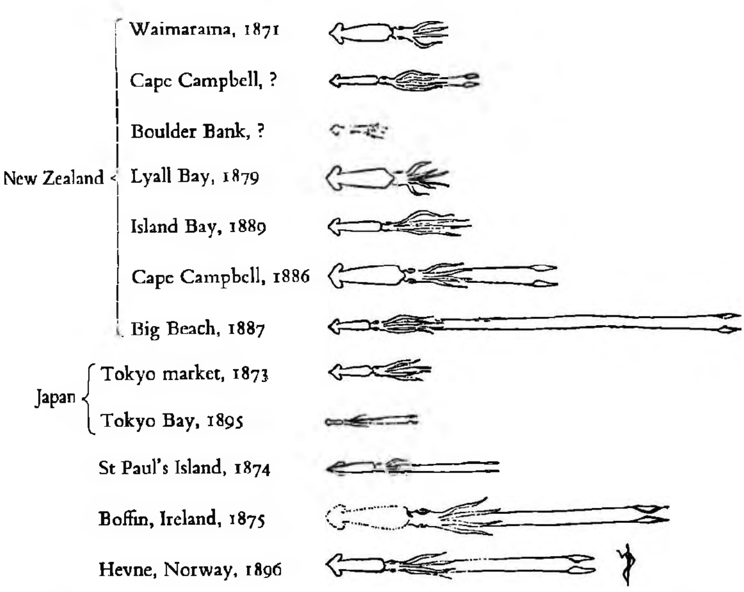
Sergeant O'Connor sent these remains to the Royal Society of Dublin.

From their proportions the monster must have been about the size of the 47-foot Bonavista Bay specimen. In 1880 another specimen was washed up in Ireland, but it was not reported until 1918.

Meanwhile the giant squid was making news in New Zealand. At Waimarama on South Island a 'dead octopus' which was certainly a squid was washed up in 1871. From the end of the tail to the root of the arms it was 10 feet 5 inches long. The circumference of the body was more than 10 feet, and the arms were about 5 feet 6 inches long. The Maoris said it was a *taniwha* (or monster).

> They say that a *taniwha* of this description attacked and swamped a canoe on its way to Otago: in fact they do not hesitate to say that this is the identical animal that did the deed!

Several more *taniwhas* appeared in New Zealand. A 20-foot specimen was found near Cape Campbell, a little 8-foot one caught by fishermen near Nelson in Cook Strait, and another one of unspecified size found near Flat


New Zealand
Waimarama, 1871
Cape Campbell, ?
Boulder Bank, ?
Lyall Bay, 1879
Island Bay, 1889
Cape Campbell, 1886
Big Beach, 1887
Japan
Tokyo market, 1873
Tokyo Bay, 1895
St Paul's Island, 1874
Boffin, Ireland, 1875
Hevne, Norway, 1896

8. Comparative sizes of the chief *Architeuthis* outside Newfoundland, 1870–1900

Point on the east coast. And on 23 May 1879 a squid which must have weighed more than a ton was washed up in Lyall Bay. It was 9 feet 2 inches from the tail to the front of the mantle, the arms were 4 feet 3 inches long and the head 4 feet in circumference. The tentacles were only 6 feet 3 inches long and must have been mutilated.

In June 1880 an *Architeuthis*, 20 feet long including the tentacles, was washed up in Cook Strait, and in the same month of 1886 a specimen of about the same length, but with relatively shorter tentacles, was found alive at Cape Campbell. T. W. Kirk, who was responsible for recording many of these New Zealand specimens, came upon a particularly bizarre specimen in 1887. A fisherman brought him the beak and pharynx and told him that the total length was 62 feet! Kirk was disappointed to find that it was in fact 57 feet long (the tentacles are very elastic) and that 49 feet of this was tentacle. The total length does not give one a fair idea of a squid's size. The Thimble Tickle specimen was 2 feet shorter, but its arms and body were two and a half times as long.

After 1880 the monster was for a while seen only in New Zealand. No more were stranded in Newfoundland, and for a third of a century there was none in Britain. There was, it was true, a stranding in Norway near the Arctic Circle in 1889, but it did not come to light until 1946.

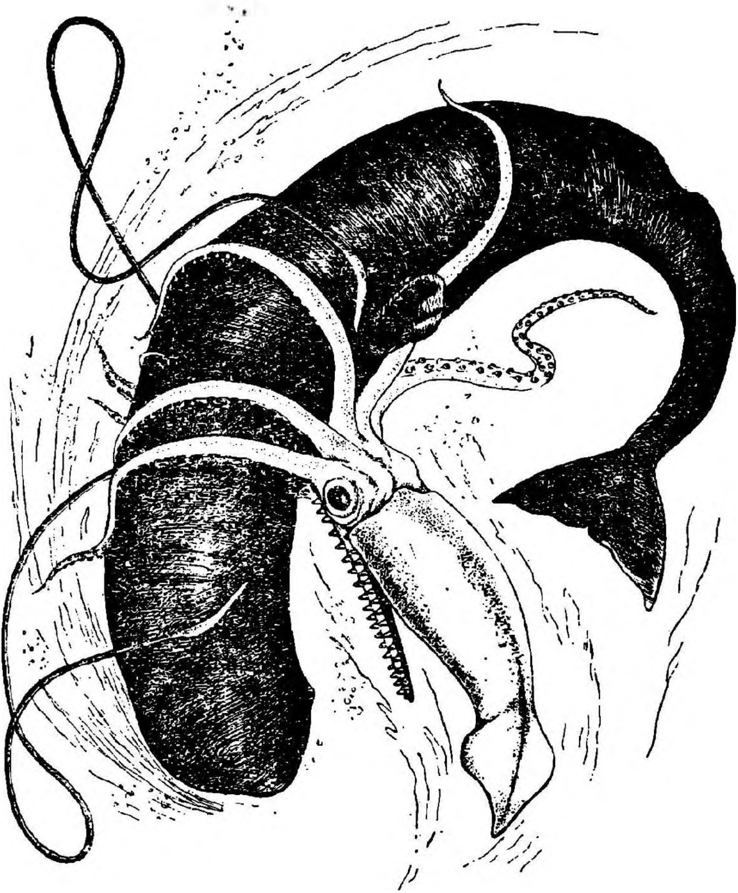
Meanwhile whalemen continued to find huge hunks of tentacle vomited up by whales. There seemed little doubt that sperm-whales were in the habit of eating giant squids, and that the two monsters must engage in titanic battles. Frank Bullen who went to sea in a whaleship in 1875 at the age of eighteen, describes such a battle in *The Cruise of the 'Cachalot'*. It occurred at 11 p.m. at the entrance to the Malacca Straits:

> There was a violent commotion in the sea right where the moon's rays were concentrated ... Getting the night-glasses out of the cabin scuttle, where they always hung in readiness [I saw a] very large sperm whale was locked in deadly conflict with a cuttle-fish, or squid, almost as large as himself, whose interminable tentacles seemed to enlace the whole of his great body. The head of the whale especially seemed a perfect network of writhing arms—naturally, I suppose, for it appeared as if the whale had the tail part of the mollusc in his jaws, and, in a business-like, methodical way, was sawing through it. By the side of the black columnar head of the whale appeared the head of the great squid, as awful an object as one could well imagine even in a fevered dream. Judging as carefully as possible, I estimated it to be at least as large as one of our pipes, which contained three hundred and fifty gallons; but it may have been, and probably was, a good deal larger. The eyes were very remarkable from their size and blackness, which, contrasted with the livid whiteness of the head, made their appearance all the more striking. They were, at least, a foot in diameter, and, seen under such conditions, looked decidedly eerie and hobgoblin-like. All round the combatants

> were numerous sharks, like jackals round a lion, ready to share the feast, and apparently assisting in the destruction of the huge cephalopod.

Bullen also tells us how when one of the first sperm-whales of the cruise was harpooned, he saw,

> ... several great masses of white, semi-transparent-looking substance float about, of huge size and irregular shape. But one of these curious lumps came floating by



9. Battle between a sperm-whale and a giant squid

> as we lay, tugged at by several fish, and I immediately asked the mate if he could tell me what it was and where it came from. He told me that, when dying, the cachalot always ejected the contents of his stomach, which were invariably composed of such masses as we saw before us; that he believed the stuff to be portions of big cuttle-fish, bitten off by the whale for the purpose of swallowing, but he wasn't sure. Anyhow, I could haul this piece alongside now, if I liked, and see ... I thanked him, and sticking the boat-hook into the lump, drew it alongside. It was at once evident that it was a massive fragment of cuttle-fish—tentacle or arm—as thick as a stout man's body, and with six or seven sucking-discs or *acetabula* on it. These were about as large as a saucer, and on their inner edge were thickly set with hooks or claws all round the rim, sharp as needles, and almost the shape and size of a tiger's.

From the size of the suckers the monster must have been much bigger than the Thimble Tickle squid, and other whalemen have spoken of fragments on the same scale. Herman Melville (whose *Moby Dick* is, alas, a monument of zoological inaccuracy) writes of pieces of squids' arms more than 30 feet long. Two American naturalists, Osmond P. Breland and Willy Ley, tell of a cachalot that spewed up a piece of arm 6 feet long and 2 feet in diameter, but I do not know the source of this information.

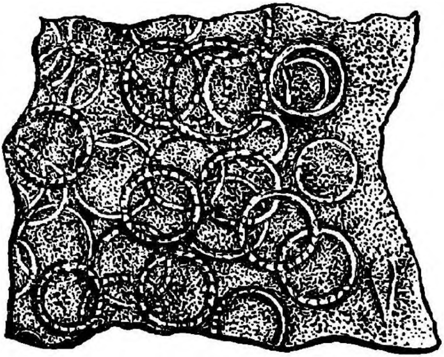
Then scientists began to find circular scars and marks on the skin not only on sperm-whales but also on a New Zealand dolphin and on various grampuses. But it was not until twenty years after the existence of the giant squid was firmly established that scientists began to consider that it might be responsible. Yet the prevalence of these scars was such that it seemed as if squids might eat cetaceans no less than sperm-whales did squids.

In 1903 the Norwegian oceanographic ship, *Michael Sars*, found the floating remains of an *Architeuthis* north of the Faroes, and it was on the results of this cruise Sir John Murray and Professor Johan Hjort wrote their classic *The Depths of the Ocean*. On page 653 is a photograph of a piece of cachalot skin with round scars over an inch in diameter (see Fig. 10).

This size is often spoken of as if it were a record, but if we compare the size of the suckers with the length of the body including the head in the specimens recorded by Verrill and others for which we have records we find that the diameter of the largest suckers is one hundredth of the length of the body and head, and that this rule does not vary by more than 10 per cent. The suckers on the Thimble Tickle squid must therefore have been between 2½ and 2¾ inches in diameter—which is about double or almost triple the size usually given. Conversely the size of a sucker or of the scar it has made, will give us the minimum size of the *Architeuthis* responsible—*minimum* since there is no need to suppose it was the largest sucker. This leads to some surprising results. L. Harrison Matthews wrote in 1938 after a whaling cruise during which he examined eight-one male cachalots and fourteen females:

> Nearly all the male Sperm whales carry scars caused by the suckers and claws of large squids, scars caused by suckers up to 10 cm in diameter being common.

This would imply that the squid would have a head and body more than 30 feet long and with the arms about 50 feet long—the size of Olaus Magnus's monstrous fish—and much bigger than the Thimble Tickle monster. Indeed most of the stranded *Architeuthis* would be of less than average size. Is there perhaps a snag in the argument? Could they be old scars which have increased with size as the whale grew? This hardly seems likely. Dr Harrison Matthews has said that scars are rare on female whales, which he thinks tackle only smaller squids. A baby whale would be kept well away from such huge brutes, and, if attacked, would hardly survive. Could the scars be made by something else? They must be squids, which are the only cephalopods with toothed suckers. But what about other kinds of squid? Now there are other squids which relatively speaking have much larger suckers, *Stenoteuthis caroli,* for instance, is only 2 feet 8 inches long, but its suckers are ¾ inch across. But these other squids are all small, and it seems likelier that there should be an *Architeuthis* less than twice as large as the biggest known specimen than a *Stenoteuthis* five times as big.

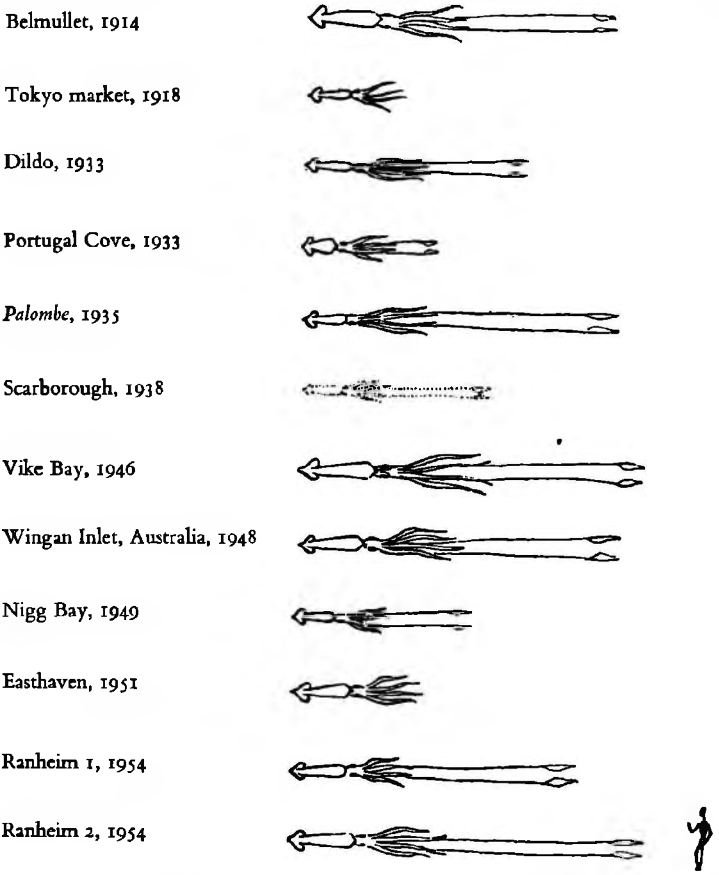


10. Circular scars on a piece of sperm-whale's skin, after Murray and Hjort, 1912

Yet many zoologists are unwilling to accept it. Perhaps this is because there is evidence of even bigger scars. Ivan Sanderson who has read almost everything ever written about whales in order to write his fascinating *Follow the Whale*, observes:

> The largest rings from the largest squids have a diameter of about four inches, yet scars left by such suckers on the skin of captured sperm whales have measured over eighteen inches in diameter. It took several centuries for zoologists to accept the existence of the kraken, as the Norse fishermen had always called the *Architeuthis*, and its size still seems somewhat shocking. The mere suggestion that there might be forms almost five times greater in the depths of the oceans is regarded as so outrageous as to be altogether taboo.

It seems like madness to imagine a monster with a head and body 150 feet long or 200 feet with the arms and 500 feet long with the tentacles. Any

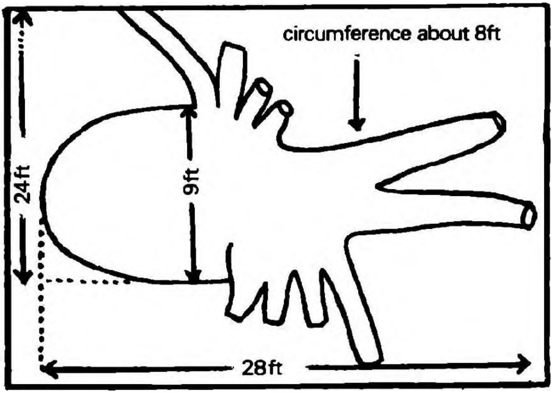

Belmullet, 1914
Tokyo market, 1918
Dildo, 1933
Portugal Cove, 1933
Palombe, 1935
Scarborough, 1938
Vike Bay, 1946
Wingan Inlet, Australia, 1948
Nigg Bay, 1949
Easthaven, 1951
Ranheim 1, 1954
Ranheim 2, 1954

11. Comparative sizes of the chief *Architeuthis* described since 1900

solution would be better than this! Yet Willy Ley talks of 'marks on the skin of such a whale, looking like the mark of sucking disks over 2 feet in diameter'. I do not know his authority for this and suspect a misprint for '2 inches', but one cannot explain all evidence by possible misprints.

In the present century strandings of *Architeuthis* have become quite familiar, especially in Britain and Norway. The synopsis of the more important ones in Fig. 11 shows that they are all of relatively small size compared with the Newfoundland crop, and this has led scientists to think that earlier dimensions must have been exaggerated. But there is one modern example which is of very considerable size.

W. White of Fascadale, Natal, wrote to the *Natal Mercury* that on 25 October 1924 he and his friend Frank Strachan went to look at the monster the natives said was lying on the beach at Baven-on-Sea near Margate, Natal. They thought it was 'a record octopus'. In this he was certainly mistaken for White's sketch shows the remains of ten arms on the mutilated animal. But this does not affect his good faith, especially as he urges his readers to come and look at it and tells them how to do so. He measured the beast under Strachan's eye and sent a drawing to the paper, from which is clear that it was even bigger than Olaus Magnus's monstrous fish (see Fig. 12). He thought that the mutilated tentacle must have been 22 feet long before it was eaten, making the total length about 80 feet. But as the body was 9 feet thick this is certainly an underestimate. In proportion to the Thimble Tickle squid it must have been no less than 115 feet long without even including the long tentacles. This is also confirmed by the thickness of the arms which seem from the sketch to be about 16 inches thick at the base. Of course we



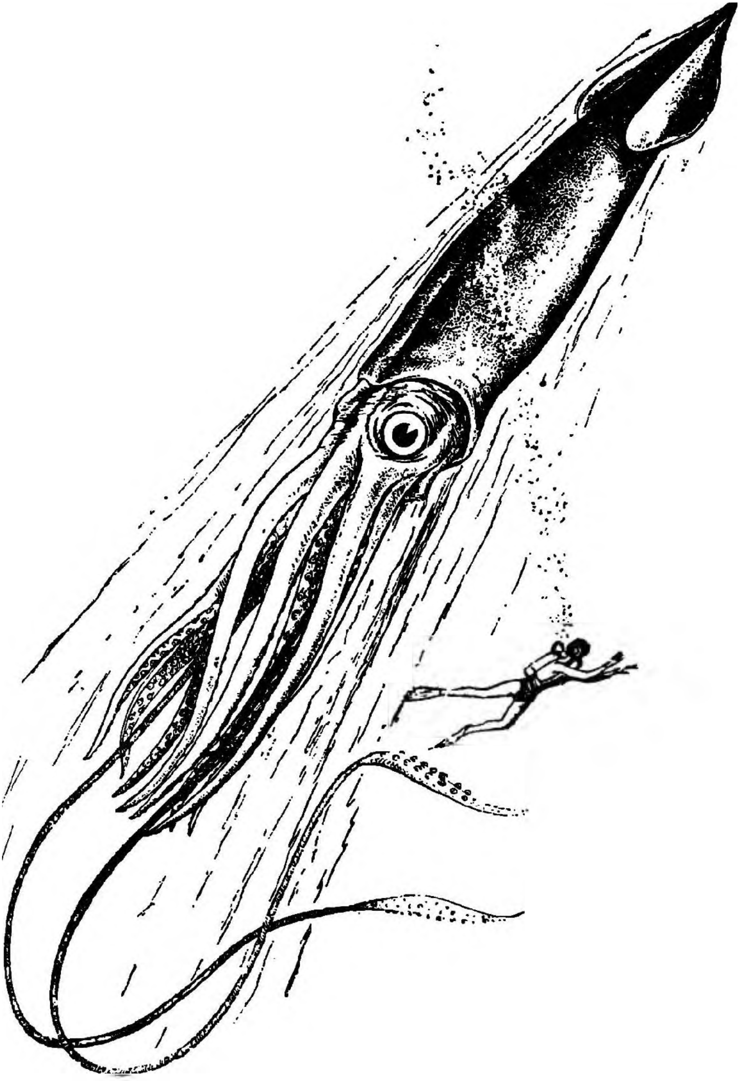
12. Outline of Baven-on-Sea monster, 1924

cannot be certain that it was an *Architeuthis*, for the remains have been so mutilated that there is hardly anything left but the head.

Thus, apart from this slightly doubtful example, none of the more recent stranded giant squids begin to approach the size of those whose sucker-marks have been found on whales. Yet there is plenty of other evidence for really monstrous specimens. There are all the huge pieces of squids' arms found in the bellies of whales. Dr Schwediawer spoke of one 27 feet long and as thick as a ship's mast, Captain Benjohnson of one 35 feet long and as thick as a mast at the root, Captain Reynolds of one 45 feet long and 2 feet 6 inches thick, Captain Dens of the end of an arm 25 feet long and 'nearly as thick at the bottom as a mizzen-mast spar', Captain Andersen of another 25-foot one 'so thick you could only just embrace it', Captain E. E. Smith of pieces of a squid's arms as large as a beef-barrel and with suckers as big as a dinner plate; Frank Bullen of one as thick as a stout man, Herman Melville of arms more than 30 feet long and Breland and Ley of one 2 feet in diameter.

Must we reject all this evidence? There is no reason to trust it less than the fishermen's and clergymen's accounts upon which most of Professor Verrill's descriptions are based, for of the nineteen specimens of *Architeuthis* in Newfoundland and Labrador we have not the slightest remains of twelve and must rely on eye-witnesses.

Now most of these 'arms' cannot be squids' tentacles which are known to be well over 30 feet long—those on the phenomenal Big Beach one being 49 feet long—for these are the same thickness throughout except at the easily recognizable swelling at the end, and even on the biggest specimens are no thicker than a man's arm. They must be sessile arms. By comparison with other specimens we can calculate that the official record from Thimble Tickle must have had arms about 20 feet long and 10 to 12 inches thick. If these vomited arms all come from *Architeuthis*, how big were the original animals? There are two main species of *Architeuthis*, one of which has relatively longer arms than the other, but in neither case are the arms markedly longer than the body and head. If, therefore, we double the length of the arms we shall have a minimum length for the whole animal, apart from the two long tentacles. The results then are—always *without* the long tentacles—as follows: Dr Schwediawer's squid was 54 feet long, Captain Benjohnson's 70 feet, Captain Reynolds's 90 feet, Captain Dens's at least 80 feet. Captain Andersen's must likewise have been over 50 feet, and the fact that the arm was at least 20 inches across would make its length about 65 feet. The size of suckers on Captain Smith's chunk as large as a beef-barrel indicates a length of 120 feet. Frank Bullen's squid would have been at least as large as the Thimble Tickle specimen, while Melville's 'arms' could have been tentacles. Breland and Ley's chunk, twice the thickness of the official record, implies a specimen at least 80 feet long, and the Baven-on-Sea specimen must have



13. The size of the Thimble Tickle squid compared to a diver

been about 115 feet long. All these lengths exclude the long tentacles. Now these long tentacles always extend beyond the arms by at least as much as the length of everything else put together. We therefore have squids 100, 108, 130, 140, 160, 180, 230 and 240 feet long over all. And indeed as female squids have relatively even longer tentacles, some might be more than 300 feet. Even if we knock off 50 per cent to allow for natural exaggeration this is a great deal more than the official record of 57 feet.

One begins to wonder why the evidence of 'A very respectable person by the name of Pike' and 'a certain Mr Haddon, a school inspector' was rejected out of hand when they claimed to have measured specimens 80 and 90 feet long from beak to tail. Even if their length was not actually 'measured' as Murray says, but just estimated, and greatly exaggerated, if we halve them they are still two or three times as big as the Thimble Tickle monster and would have had arms like those seen by Captains Reynolds and Smith or chunks of flesh like Frank Bullen's. Meanwhile the sucker scars on whales show that specimens nearly twice as big as the Thimble Tickle one are not even rare, and if the dimensions of other scar-marks are accurate the most fantastic sizes would be confirmed.

Some of the fable of the *kraken* is based on exaggerations or even lies, but surely we cannot reject the concordant evidence of eye-witnesses, sucker-marks and dismembered arms.

We have not, however, confirmed Denys de Montfort's claim that giant squids could and did capsize ships. Apart from what he tells us we have little evidence of their attacking ships. In 1874, when the squid was much in the news, *The Times* carried a long item culled from Indian newspapers. It told how the *Strathowen* had seen a 150-ton schooner, the *Pearl*, becalmed in ballast in the Bay of Bengal, seized and capsized by a giant squid. It included a graphic—perhaps too graphic—account of the disaster by the schooner's captain. This tale has never been confirmed and it may well have been an opportune hoax, for the *Strathowen* is not to be found in *Lloyd's Register* for that year. The question is, *could* a really enormous squid have done so? It is not difficult to calculate a squid's weight, for its density must be almost that of water and its shape is that of a cigar. We can thus calculate that the *Alecton*'s 20 to 24 foot squid must indeed have weighed nearly 3 tons as the sailors thought. The Thimble Tickle specimen cannot have been much short of 30 tons. A specimen twice as long—and we have good reason to think there are such things—would weigh getting on for 240 tons.

An American specialist, Dr G. E. MacGinitie, has estimated that the Thimble Tickle specimen weighed 29¼ tons without the tentacles and 30 tons with them. But Frank Lane, author of *The Kingdom of the Octopus*, refuses to accept these figures on the grounds that no specimens that were actually measured were more than 2 tons; and he quotes an expert at the British Museum who was inclined to think that a weight of 30 tons was 'quite ridiculous'. But is it? The calculation is not difficult—especially if we use the metric system. The specific gravity of a squid must be almost exactly the same as that of water, so one cubic metre of its flesh will weigh one metric ton.

If we ignore the long tentacles and consider the squid with its tapering arms held together, it will form a cigar or spindle shape. Now the volume of a cylinder of radius r and length l is $\pi r^2 l$, while that of two cones placed base to base is $\frac{1}{3}\pi r^2 l$. The volume of a spindle shape will be somewhere between the two, say $\frac{1}{2}\pi r^2 l$. If we apply this to the second Ranheim specimen (4 m. long, 20 cm. radius of cross-section) we get $\frac{1}{2}\times 3{\cdot}14\times 0{\cdot}2^2\times 4=0{\cdot}271$ m^3, or 271 kg., and Professor Sivertsen reckoned it to be between 200 and 300 kg. The *Alecton* squid was less precisely measured, but it was between 6·1 m. and 7·3 m. long, and the original drawings show a diameter of about a metre. The same formula gives a weight between 2·39 and 2·88 metric tons according to the length, and it was estimated at the time to be between 2 and 3 tons.[1]

Let us now take a large measured but unweighed specimen. The Three Arms squid (1878) was 10·65 m. long and its radius of cross-section 0·575 m. This gives a weight of 5·325 metric tons. The Thimble Tickle specimen is more complex because we only know that the length from the tail to the beak was 20 feet (6·1 m.). Verrill thought it was an *Architeuthis princeps*, and from the proportions of that species it would have been 40 feet long (12·2 m., let us say 12). Its thickness is also unspecified, but the values for the radius of cross-section would be 0·35 m. if it was very slender, 0·65 m. if of usual proportions and 1·2 m. if very thickset. These values give us weights of 2·304, 8·508 and 27·126 metric tons according to the animal's proportions. Thus Dr MacGinitie was not so far out in his figure of 29¼ tons, provided we take this as the maximum weight if the specimen was very thick.

We have therefore shown that there are *Architeuthis* weighing more than 5 tons and bigger ones which may weigh between 2 and 27 tons, though the normal weight would be around 8 tons. We have good reason to believe there are specimens twice as long as the Thimble Tickle one. One of these would weigh eight times as much, between 16 and 216 tons, probably around 64 tons. It could certainly capsize a small boat and might even have sunk the *Pearl* by shifting her ballast. But apart from this schooner there is no other account of one capsizing a boat. The crew have always saved themselves by hacking off the arms.

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[1] In Professor F. Aldrich's collection in the University of Newfoundland there is a 'practically intact' specimen of an *Architeuthis* from Conche. It is 5·7 m. from the tip of the tail to the end of the arms, and its diameter (calculated from its circumference) is only 0·35 m.; it is thus, like the Grand Banks specimen of 1871, one of the most elongated ever recorded. According to my formula its weight should be about 0·274 tons, or, if reduced to the very minimum of two cones base to base, about 0·182 tons. But in fact it weighs a little less than 0·150 tons (331 lbs). Therefore *either* the specimen's internal organs must have come out before it was weighed, *or*, with its incredibly low density, it must have floated, which would not have fitted it for a squid's pelagic life. Otherwise we must call in question the basic laws of geometry and physics.

Squids are predatory animals and will attack what they take to be their prey. This has, on occasion, included man. When the *Britannia* was sunk on 25 March 1941 in the middle of the tropical Atlantic twelve men were left adrift on a raft so small that some of them had to take turns at hanging on to it in the water. One night a huge squid hauled one of the men off the raft and he was not seen again. Soon afterwards a tentacle attacked Lieutenant R. E. G. Cox, fortunately letting go again, but removing discs of skin and flesh the size of a penny (1¼ inches diameter). This implies that the squid was 23 feet long. Two years later the scars were examined by Dr John L. Cloudsey-Thompson, the British biologist, and no doubt Cox still bears them as proof of the ferocity of the squid.

The squid might take a ship for its prey. Both Denys de Montfort's examples were not under way when attacked, and the *Pearl* was becalmed. Captain Arne Grönningsaeter of the Royal Norwegian Navy tells of a squid attacking a moving ship. It happened between 1930 and 1933 when he was captain of the 15,000-ton tanker *Brunswick* and was sailing between Hawaii and Samoa at 12 knots. The giant squid swam on a parallel course at 20 to 25 knots, and overtook the ship until it was 50 yards away on the port bow. Then it wheeled round and made straight for a point a third of the ship's length from the bow. It took hold of the hull there at about 12 to 15 feet down, but could not get a trip on the smooth plating and gradually drifted off until it was cut to pieces by the propeller.

On two other occasions the *Brunswick* was attacked in exactly the same way. Captain Grönningsaeter thought that the squid had mistaken her for a whale—and he may well be right. Perhaps the ship's particular speed set off a reflex action, just as barracuda will attack anything small that moves at exactly 18 knots. Or there may have been some other particular reason. For, even allowing that such attacks could easily go unnoticed on shipboard, they seem to be most exceptional.

Almost all our knowledge of the giant squid is due to moribund specimens being washed up. They do not seem to approach the coast unless they are dying. These suicides seem to me to be due not just to sudden changes of temperature, but to exceptional circumstances when freak currents carry them out of their warm habitat into colder water where their food is lacking, or may even have itself died in such quantities as to kill all the creatures that normally feed upon it. The whole question of epidemic death of sea-creatures is most complex and far from being solved. There are, for instance, unicellular plants called peridinians, which contain a poison ten times stronger than strychnine. When they suddenly proliferate the whole sea is poisoned.

If the giant squid were not so susceptible to death from such causes it might still be a creature entirely of legend, and we should treat the following passage from Thor Heyerdahl's story with the same condescending amusement as Olaus Magnus or St Brandon:

> About two o'clock on a cloudy night, on which the man at the helm had difficulty in distinguishing black water from black sky, he caught sight of a faint illumination down in the water which slowly took the shape of a large animal. It was impossible to say whether it was plankton shining on its body, or if the animal itself had a phosphorescent surface, but the glimmer down in the black water gave the ghostly creature obscure, wavering outlines. Sometimes it was roundish, sometimes oval or triangular, and suddenly it split into two parts which swam to and fro underneath the raft independently of one another. Finally there were three of these large shining phantoms wandering round in slow circles under us. They were real monsters, for the visible parts alone were some five fathoms long ... they were not whales, for they never came up to breathe.

No, but they could well have been giant squid. And what could give a better picture of our almost total ignorance about this mighty creature than these vague phantoms circling in the dark?

3

The Age of Terror
(From Antiquity to the Middle Ages)

Thus Satan talking to his neerest Mate
With Head up-lift above the wave, and Eyes
That sparkling blaz'd, his other Parts besides
Prone on the Flood, extended long and large
Lay floating many a rood, in bulk as huge
As whom the Fables name of monstrous size,
Titanian, or *Earth-born*, that warr'd on *Jove*,
Briarios or *Typhon*, whom the Den
By ancient *Tarsus* held, or that Sea-beast
Leviathan, which God of all his works
Created hugest that swim th' Ocean stream:
Him haply slumbring on the *Norway* foam
The Pilot of some small night-founder'd Skiff,
Deeming some Island, oft, as Sea-men tell,
With fixed Anchor in his skaly rind
Moors by his side under the Lee, while Night
Invests the Sea, and wished Morn delayes:

JOHN MILTON, *Paradise Lost*

IN THIS one simile Milton runs together three archetypes of the sea-serpent: the Norwegian serpent, which had been described by Olaus Magnus, the island-beast and the leviathan of the Bible. He has more justification than at first appears, for in Physiologus, the father of all the bestiaries, the island-beast was described, not as a whale as in the later bestiaries, but as a serpentine animal called *aspidochelone* (snake-turtle). Moreover there are many similarities between Olaus Magnus's great serpent and the leviathan.

The name leviathan (*livyātān* in Hebrew) appears in five different places in the Old Testament[1] and is probably derived from *livyāh* and *tan*, which has usually been aptly translated 'tortuous monster'.[2] It is clearly a sea-creature since King David sings in the Hundred-and-Fourth Psalm of the Mediterranean as, 'this great and wide sea, wherein are things creeping innumerable, both small and great beasts. There go the ships: there is that leviathan, whom thou hast made to play therein.'

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[1] Job, iii, 8 (R.V. only), xli, 1; Isaiah, xxvii, 1; Psalms, lxxiv, 14, civ, 26.

[2] The word *tan* (plural *tannim*) or *tannin* (plural *tanninim*) has to be translated variously according to the context as snake, crocodile, jackal, whale, dragon and great fish. Quite clearly all the references cannot apply to the same animal, but they all apply to something big or terrifying. 'Monster' is therefore probably our best equivalent.

Some authors have used this text, vague though it is, to argue that the leviathan was a whale—although whales are not in the least tortuous. The most detailed description is undoubtedly that in the Book of Job:

> Canst thou draw out leviathan with an hook? ... I will not conceal his parts, nor his power, nor his comely proportion ... Who can open the doors of his face? his teeth are terrible round about. His scales are his pride, shut up together as with a close seal. One is so near to another, that no air can come between them. They are joined one to another, they stick together, that they cannot be sundered. By his neesings a light doth shine, and his eyes are like the eyelids of the morning. Out of his mouth go burning lamps, and sparks of fire leap out. Out of his nostrils goeth smoke, as out of a seething pot or caldron. His breath kindleth coals, and a flame goeth out of his mouth. In his neck remaineth strength, and sorrow is turned to joy before him. The flakes of his flesh are joined together: they are firm in themselves; they cannot be moved. His heart is as firm as a stone; yea, as hard as a piece of the nether millstone. When he raiseth up himself, the mighty are afraid: by reason of breakings they purify themselves. The sword of him that layeth at him cannot hold: the spear, the dart, nor the habergeon. He esteemeth iron as straw, and brass as rotten wood. The arrow cannot make him flee: slingstones are turned with him into stubble. Darts are counted as stubble: he laugheth at the shaking of a spear ... He maketh the deep to boil like a pot: he maketh the sea like a pot of ointment. He maketh a path to shine after him; one would think the deep to be hoary. Upon earth there is not his like, who is made without fear. He beholdeth all high things: he is a king over all the children of pride.

From this striking description of the 'tortuous monster' we can pick out the following characteristics: comely proportion, strong neck, mouth surrounded by teeth, eyes that shine red, skin covered with close scales, smoking nostrils. He 'raiseth himself' up above the waves and 'beholdeth all high things'. The rather obscure phrase, 'the flakes of his flesh are joined together' has been translated by some as 'the members of his body are joined together', which might mean that the limbs and toes were fused to form flippers as in many water animals—which would take us a long way from a true serpent.

This apparent contradiction is not very surprising. A huge sea-monster with *some* snake-like characteristics would naturally be thought to be a true snake, especially as in all mythologies the snake is a personification of evil and thus the Devil's favourite disguise, and a terrifying monster seen in the sea could likewise only be the Devil himself. Thus the monster must needs be a snake, even though it had feet.

The identity of the leviathan has puzzled the curious. In the seventeenth century Samuel Bochart tried to prove that it was a crocodile, and this view has been widely accepted. But the crocodile is a river animal and does not live in the sea, at least in the Mediterranean and Red Sea where the Jews could have known it. The only sea crocodile (*Crocodylus porosus*) lives only in the East Indies, Ceylon, China, the Malay Archipelago and Australia, where it sometimes swims from island to island, even as far as Fiji. Had the leviathan been a crocodile the phrase would surely have been 'In his tail remaineth strength' and not 'In his neck ... ' for the crocodile has virtually no neck. Nor can it raise itself up. Moreover it was much too well known by the Egyptians, and hence surely by the Israelites, to be thought invulnerable. Herodotus mentions several ways in which the Egyptians caught the crocodile, one of them being to 'draw it out with a hook' baited with pork.

The Jewish patriarchs were not the only people in the ancient world to mention giant serpents in the sea. They are found in most ancient and primitive mythologies, whether Chaldean, Hindu, Chinese or Norse, as well as in those of the American Indians and Australian Aborigines. These, however, are only vague legends which may just as well derive from the myth of a Snake-Devil in the waters of Hell as from a real animal, legends that have been much altered from place to place and garnished with magic. But we can perhaps say that certain marine animals, glimpsed among the waves, must have so fired the imagination of several races because of their huge size and serpentine shape that they were treated as diabolic creatures on the scale of the heroes and demigods or as the cause of disasters. Thus we learn that Sargon II, who reigned in Assyria from 722 to 705 B.C., saw a sea-serpent in the Mediterranean when sailing to Cyprus. This, so far as I know, is the first mention in history of a particular sighting of the subject of this book.

To find others we must turn to Classical Antiquity, but there we shall usually discover that they do not refer to the sea-serpent, even in the widest sense, but to other creatures which have nothing to do with the case.

There is the story of monstrous blue worms of the great Indian rivers which come out of the mud at night to devour oxen and camels. Ctesias (quoting Statius Sebosus), Philostratus, Solinus, Aelian and Palladius have told this story in many variants and with increasing exaggerations. A beast that began some 10 to 12 feet long gradually became a 30-foot eel according to Solinus and a gargantuan serpent capable of swallowing an elephant whole according to Bishop Palladius. The original animal is mysterious enough. Being so small it has little to do with the great sea-serpent. In any case, so as not to confuse the present study I shall keep unknown freshwater animals for another volume, even though there is a close connection between some sea-serpents and similar creatures found in lakes, lochs and rivers.

There follow various stories of gigantic snakes, but living on land, which many authors have tried hard to include in the sea-serpent's dossier. Aristotle may have been unintentionally responsible for this confusion when he wrote:

> In Libya the snakes are reported to be of a size of which one can have no idea. Navigators maintain that they have found in these regions, where they have come ashore, numerous skeletons of cattle which clearly had been devoured by these snakes; and that having returned to their craft they have been pursued by these snakes, which have thrown several sailors into the water, capsizing the boat.

The pythons in Africa, which are sometimes almost 25 feet long, are certainly capable of swallowing a calf and are excellent swimmers: they can travel several miles in the water.[1] Solinus, who compiled and corrupted Pliny, says that those in India, which are even bigger, can swallow whole 'deer and other animals of the same size', which has proved to be true. He also reports that they 'swim into the middle of the Indian Ocean and land, in order to seek their food, on islands which are separated by a great distance from the continent'. Once again this shameless boaster is telling the truth. After the eruption of Krakatoa destroyed all life on the island in 1883 it was found that the reticulated python, which may grow to more than 30 feet long, was one of the first land vertebrates to reappear. At all events it was there in 1911 and must have swum at least thirty miles to reach the island from the nearest point on the Java coast.

It is not impossible that a huge python, exhausted by swimming a long distance, should have tried to climb aboard a small boat to rest and that its weight should have capsized it. One accident of this kind would be enough to give birth to a lasting legend. But one swallow does not make a summer, and one python found wandering at sea is not enough to make pythons into sea-serpents. Yet some have tried to do so, assuming that it would provide a simple and plausible explanation.

Pliny's own account of African 'dragons' that sometimes crossed the Red Sea to Asia is more to our purpose:

> Ethiopia also produces dragons like those of India; they are twenty cubits [30 feet] long. I merely wonder why Juba thought they had crests. The Ethiopians who live where the greatest number are found are called Asacheans. It is reported that on the coasts of this country these dragons weave together in fours or fives in the form of hurdles, and that with their heads raised, making sail as it were, they let themselves be carried by the waves towards Arabia there to find better feeding.

King Juba II of Mauretania was the son-in-law of Antony and Cleopatra and a contemporary of Pliny; he wrote works on natural history in Greek. Pliny's surprise that he should have given the snakes crests was because he thought they were ordinary snakes like pythons, but Juba is clearly describing quite a different sort of animal, perhaps even a sea-serpent, for it is often described as having a crest. Snakes with crests are more likely to remind the reader of Virgil's famous exclamation—*horresco referens*—about the monsters sent to strangle Laocoon and his sons.

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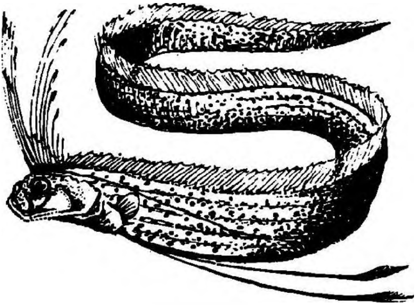
[1] See my *On the Track of Unknown Animals*, (1958) p. 444.

> Two snakes from Tenedos (I shudder to think of it) come on over the peaceful sea unwinding their huge coils and swim abreast towards the shore. Their breasts rise among the billows, their bloody crests tower over the waves; their flanks skim the abyss, and their vast tails curve in sinuous coils, the waves carrying the spume. Already they have reached the beach: their burning eyes shine, red with blood and flame; their tongues, like a dart, flicker in their mouths, which they lick, hissing ...

The colour of these snakes' crests makes one suspect that Virgil's terrific picture may be inspired, in part at least, by one of the most mysterious of the world's larger fishes, the Oarfish (*Regalecus glesne*), or 'King of the herrings', often called the Ribbon-fish. It was for long thought to precede or accompany shoals of herrings. It is long and serpentine, and right along its spine is a crest of bright coral red which it can raise into a sort of plume on its head. Its long pelvic fins, rod-like with a little blade at the end, give it the name of Oarfish, and the flattened shape of its long silvery body that of Ribbon-fish.



14. Oarfish

Little is known about it. It was first described scientifically by Peter Ascanius in 1770 and Morten T. Brünnich in 1788 from specimens washed ashore. With very rare exceptions, it has hardly ever been examined except in the form of disintegrating remains on the beach or dying specimens on the surface. It is almost certainly a pelagic fish of medium depths which does not come to the surface unless it is sick or dying. Its flesh is so weak that it often breaks under its own weight if one tries to lift it out of the water.

The first specimen scientifically described in 1770 was found near a farm called Glesnaes in Norway and was given the specific name of *glesne,* but oarfish were soon found to live all over the world, including the Mediterranean, where the Greeks and Romans could very well have known it. In the sixteenth century there was a specimen of a Mediterranean oarfish in the cabinet of curiosities of Ferrante Imperato, a Neapolitan pharmacist, who described it as *Spada marina* (sea-sword) in his *Natural History* (Plate 7). I myself identified a specimen 6 feet 9 inches long which had just been harpooned by Étienne Lambaere, lighthouse-keeper on the Ile du Levant, skin-diving in the Mediterranean on 9 July 1963 (Plate 10).

There is no doubt that oarfish of 21 feet have been accurately measured. According to most works of zoology there have been some that were two or three times as long. But we shall see that there is no good evidence for this.

Around 1848 the fishing-smack *Sovereign* of Hull, fishing in the Firth of Forth for Lord Norbury, caught a huge serpentine fish, 'which when spread out at length on the deck, extended beyond the limits of the vessel at stem and stern'. The fishermen were not surprised at its length, for they had come across another even larger one, dark brown in colour. The present fish was only from 4 to 9 inches thick with a dorsal fin 7 to 8 inches high. It was undoubtedly an oarfish, which in Scandinavia not even the dogs would eat, and Lord Norbury threw it overboard.

But how long was it? All we know for certain is that the smack was of 40 tons burden. Dr Andrew Wilson, who was told about it by Lord Norbury, reckoned that the smack must be 60 feet long and that oarfish were sometimes longer. But he was mistaken. In the first half of the nineteenth century there were indeed 'coasters of around 60 ft. overall rigged as smack or ketch'.[1] But they were of much more than 40 tons. My friend François Beaudouin, who is an expert, maintains that such a boat could easily be of 40 tons burden and yet no more than 35 to 45 feet in overall length.

The often-repeated assertion about the great length of oarfish seems to be based solely on the *Sovereign*'s specimen and the rather dubious conclusions drawn from it. None of the other known specimens is anything like so long. Newcastle Museum has a specimen 12 feet 3 inches long, 11¼ inches deep, 2¾ inches thick caught near Cullercoats in Northumberland in March 1849. Another, washed up near Otago in New Zealand in 1883, was 12 feet 6 inches long, 15¼ inches deep and 3½ inches thick. A larger specimen caught off Northumberland around 1875 was 13 feet 6 inches long, 15 inches deep and 5 inches thick, and a specimen from Van Diemen's Land in 1878 was 14 feet long, 15 inches deep and 8 inches thick. The largest oarfish ever measured seems to be the one washed up on 22 February 1901 at Newport Beach in California. It weighed 'about 500 or 600 pounds' was 'twenty-one feet and some inches' long, but Horatio J. Forgy, who examined and described it has not given us its other dimensions. All the same we can estimate that its depth must have been about 18 inches and its thickness 9 to 12 inches.[1]

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[1] See Douglas Phillips-Birt: *Fore-and-Aft Sailing Craft* (1962) p. 113 and fig. 84.

The dorsal fin usually accounts for a quarter of the fish's depth. Thus the Northumbrian specimen which was 15 inches deep had a fin 3 to 4 inches high. Even allowing for the tendency for an animal to become more and more elongated the more it grows, it is hard to believe that an oarfish which was no more than 9 inches thick and with a dorsal fin not exceeding 8 inches high could be more than 30 feet long. Even this would have been the longest specimen ever observed.

As to the even larger creature, dirty brown in colour, which the fishermen mentioned, it was certainly no oarfish, but an unknown species—a real sea-serpent!

It seems that the only reason why there has been an attempt to stretch the maximum size of the oarfish, is in order to explain the sea-serpent by an animal known to science. We shall see that this explanation has often been put forward. Yet the colour of the crest on the oarfish's head, which would be more than 3 feet high on a specimen 28 feet long is so unique and bizarre, especially among sea-creatures, that it can be confused with no other serpentine beast.

It is therefore most likely that the two serpents from Tenedos whose 'bloody crests tower over the waves' were modelled on oarfish. There is even less doubt that these huge fragile fish could not have done the least harm, even to a newborn baby left upon the beach. But poetic licence will explain much ...

The identity of King Juba's sea-dragons is less obvious, as the colour of their crests is not stated. The report is vague, and therefore it is best not to maintain that the animals were of an unknown kind. There are enough detailed and absolutely authentic descriptions of the sea-serpent for us to be able to ignore any doubtful cases.

The classical texts usually cited apropos of the sea-serpent actually refer to smaller animals in Indian rivers, to true land snakes, or to ribbon-fish. But there are other little-known references which may be to our purpose. As we have seen in the previous chapter Aristotle, in his *History of Animals*, talks of sea creatures 'which cannot be classified by kind because they are too rare'.

> Among the fishermen with long experience, some claim to have seen in the sea animals like beams of wood, black, round and the same thickness throughout.

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[1] Or so it appears from an old photograph which is probably of this oarfish (Plate 8). It was published in *Animal Life*, an American magazine, of July 1954 as a sea-monster washed up at Newport Beach in California in 1903. But Charles Davis II who discovered it is not sure of the date. From the size of the thirteen people standing side by side behind the fish it would have been about 20 feet long. It would be most remarkable if two such large specimens should be washed ashore in the same place within two years.

We shall find similar descriptions from many who claim to have seen the sea-serpent. Finally Pliny may also have been referring to the sea-serpent when he wrote in the ninth book of his *Natural History*:

> The largest animals are, in the Indian Ocean the Sawfish (*pristis*)and the Whale (*ballaena*), in the Gallic Ocean the Blower (*physeter*), which stands up like a huge column and higher than the ships' sails, and spouts a torrent of water.[1]

The 'Blower' has generally been thought to be the Sperm-whale, and Linnaeus even used the name *Physeter* as the scientific name for this great whale. Yet whales do not stand up like a huge column, the most they do is occasionally to leap out of the water in a nuptial display or a fight. On the other hand we shall often find the sea-serpent described as a column standing upright in the water. Moreover it is sometimes reported that they spout large quantities of water like Pliny's *physeter*.

When Olaus Magnus included his version of Pliny's *physeter* in his map of the northern regions of 1539, he did not think of relating it to the Norwegian sea-serpent. Yet he did not draw it as a whale, but as a beast with a horse's head and neck and two tubular vents on its skull like horns (Top left in Plate 11). And it is significant that when it was no longer an object of terror the sea-serpent was several times likened to a horse or a giraffe.

Rabelais refers to the *physeter* in the fourth book of *Pantagruel*. It is a sea-monster which Pantagruel says must be the leviathan. I think he was right, and it is interesting to see that when Gustave Doré came to draw his incomparable illustrations to the book he made the *physeter* a winding serpent with a dolphin's head (Plate 6). This must have amused the zoologists, but in fact Rabelais and Doré seem to have been better informed than Linnaeus and his disciples, who confused the *physeter* with the Sperm-whale because they did not know about the sea-serpent or could not believe that a reptile could blow like a whale. But what if it were not a reptile?

In the Ancient World, there was thus a fairly vague notion of the sea-serpent, called leviathan by the Jews and no doubt *physeter* by some Greeks and later by the Romans. The knowledge that all these people had gathered of natural history was crystallized in the compilations made when Alexandria was the cultural centre of the western world. Meanwhile Christianity, by way of the Bible, brought in a wealth of zoological fables from the Near East to swell and often to corrupt the Greek and Roman scientific heritage. From this fusion of two conceptions of the world was born the first Bestiary of

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[1] It does not seem to be known where Pliny got this information, which he must have taken from Greek sources, since *physeter* is a Greek word, apparently derived from *physao* (to blow)—and translated as 'Blower', though Cotte suggests that it was originally spelt *physē-thēr* meaning 'blown-up beast'.

Physiologus. Here we find the giant pythons merging into the leviathan, acquiring an oarfish's crest and becoming more of sea-creatures than they ever were, while the leviathan becomes more of a snake. Yet in the fog of the Middle Ages there probably lurk a few relatively direct and uncorrupted references to great serpents actually seen at sea if we can find them.

For instance there is the mysterious *aspidochelone* listed in Physiologus. Hughes de Saint Victor said in the eleventh century that it was 'a sea-beast, which had in part the appearance of a serpent, and in part that of a turtle'. Plenty of modern witnesses of the sea-serpent have said it was shaped like a plesiosaur—indeed the theory that it *is* one has always been well-supported—and this saurian was once described by Dean Buckland as 'a snake threaded through a turtle's shell'.

And what are we to make of the dragon which, according to Guillaume Durand, Bishop of Mende, appeared at Rome in the sixth century when the Tiber was in flood and the water had risen to the upper windows of the temples? It swam in the midst of the waters, its body 'like a great beam of wood'. The flood resulted in an outbreak of plague, which needless to say was blamed on the monster's foul breath, just as the lifting of the pestilence was attributed to the prayers of Pope Gregory and his flock. Yet Aristotle had written in very similar terms.

The history of the sea-serpent has already become extremely confused, since it includes several creatures with nothing in common except the elongation of their bodies. With the mediaeval Arab geographers the confusion became even worse confounded, for they were drawing not only upon their own traditions, but also upon those of the Greeks and Romans and on reports from their travellers to India and the Far East. Yet they did not think that the 'fish shaped like a camel' which the Persian cosmographer Kazvini wrote of in the twelfth century had anything to do with the sea-serpent. We shall find, however, that one of the most classic types of sea-serpent is very like a camel in the shape of its head and its humps.

While the camel-fish was wrongly omitted from the story a meteorological phenomenon was wrongly included. In 954 Mas'udi wrote in his *Meadows of Gold* about the *tennin*, a word that is clearly the same as the Hebrew *tannin*, which, as we have seen, means a monster of any kind. The Arabs made the same mistake as the translators of the Bible in thinking that *tannin* was one particular thing, and thought that *tennin* could include all its characteristics; as a result it could be almost anything.

> Some [begins Mas'udi] think that the *tennin* is a black wind that forms at the bottom of the waters, rises towards the layers of the air and attaches itself to the clouds, like the whirlwind that rises from the ground and makes the dust and all the bits of dry plants whirl with it. This wind spreads more widely as it rises into

> the air, so that those who have seen this dark cloud accompanied by storm and darkness, have thought that it was a black serpent coming out of the sea.

This explanation is adopted by the 1911 edition of the *Encyclopaedia Britannica* in its article on the sea-serpent. And Dr Malcolm Burr claimed in 1934 that it was strangely confirmed in *The Inland Waters of Africa* by S. and E. B. Worthington who describe the fearful sea-serpent (*sic*) of Lake Victoria Nyanza which 'announces its arrival with a terrible roar ... and swallows up human beings, canoes and everything in its path'. This monster, they say, 'is beyond doubt the waterspouts to which the lake is subject'. The theory is plausible enough, but it cannot begin to account for all sea-serpents.

> Others [Mas'udi goes on] think that the *tennin* is a reptile that lives in the depths of the ocean. When it grows strong it makes war on the fishes and then God sends it clouds and angels which make it come out of the abyss in the shape of a black serpent, bright and shining, whose tail as it passes knocks down the strongest buildings, trees and even mountains, and whose breath alone will uproot a host of stalwart trees. This is the opinion Ibn Abbas is said to hold.
>
> There are other opinions about the *tennin*. The historians and compilers provide many details of this kind, which we shall refrain from mentioning. Thus the *tennins* are said to be black snakes living at first in the plains and mountains; there they are surprised by the torrents and rains which carry them to the sea. Their body, fed upon many reptiles which live in the sea, becomes vast and their life-span great.
>
> That serpent which has reached an age of five hundred years becomes the master of all the other serpents in the sea, and so it comes to pass as Ibn Abbas has said.

Were these beliefs based upon beasts that were really amphibious? Or did the confusion between the various *tennins* cause land snakes to be confounded with the snake-like inhabitants of the sea? In Norway, too, people still believed in the eighteenth century that the monster was born on dry land and did not enter the water until it was too big to move except in that element, where it grew to its full size.

As we shall find later, the great sea-serpent is generally quite harmless to man, whatever may have been thought in the Ancient World and in the Middle Ages. But it was none the less feared for all that. In those days it was prudent to flee from any unknown animal, especially if it was very big, and to save one's face it was best to claim the beast was dangerous. For instance at the end of the Middle Ages the whale, which was said to be 600 feet long and 300 feet wide, was still drawn with terrible fangs and claws and was said to be much given to capsizing boats and devouring their occupants. Killer-whales, and possibly an occasional wounded sperm-whale may do this, but it is hardly a habit of ordinary whales. The savage reputation of the Norwegian sea-serpent, the leviathan and the *tennin* may be equally unfounded.

All the same it is easy to imagine the glory that a man would gain who found one of these creatures dying in shallow water and killed it. Even if it were dead upon the shore he could, with a little boasting, make himself a no less heroic reputation. Everyone would think that he had prevented this huge beast from coming ashore and committing God knows what pillage and slaughter, and they would crown him with laurels even if the monster were really quite harmless, lived only in the water and had been driven ashore by accident, as often happens to large sea-animals.

If we are to believe the chroniclers the Middle Ages were one long massacre of sea-serpents, which were thought rightly or wrongly to be amphibious and were thus called 'dragons' or more prosaically 'loathly worms'. Even the smallest kingdom could boast of some hero who had triumphed over one of these terrible monsters, whose habits cannot be taken very seriously. One head is not enough, they have to have three or even seven, they spit fire, have lightning in their eyes, and leathery wings on their backs, they guard over treasure and subsist on a diet of virgins.

Leviathan has become Proteus. All the beasts reported by travellers from distant lands have helped to garnish these nightmares. In the mediaeval world, ruled by the fear of sin and hellfire, these creatures must have every fearful feature, for they were personifications of the Devil, and only a perfect knight could destroy them. Like the leviathan of Holy Writ they must be huge, strong and armoured, spouting fire and smoke. But also they must have the lion's claws, the viper's and scorpion's venom, and even the bat's wings so that they may rule the air. Finally they must have something of the most fearful sea-creature the octopus, though instead of eight arms they have eight necks—or rather the more magical number of seven.

To find the sea-serpent in a more normal form we must wait until the eighteenth century, the Age of Enlightenment. This enlightenment, at least as regards the identity of our subject, is still weak and flickering, but it is not so dark as the long night of the Middle Ages.

4

The Luckless Bishops

(Scandinavia, Sixteenth to Eighteenth Centuries)

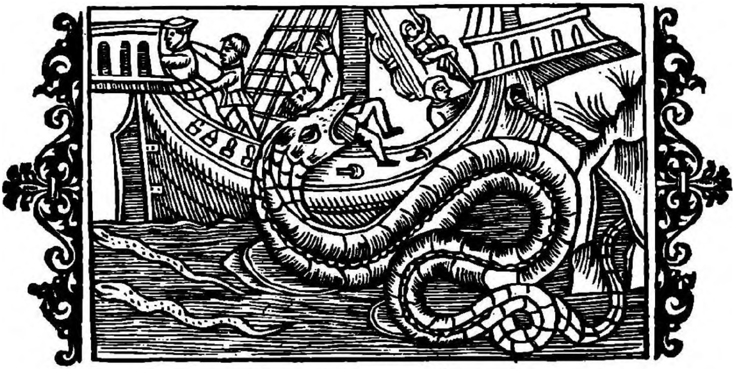
The life of a conscientious clergyman is not easy.
SAMUEL JOHNSON

IT SEEMS to have been in 1522 that sea-serpents first started making a nuisance of themselves to bishops, especially in the Norse countries. That they really exerted an evil influence on Scandinavian prelates is, of course, doubtful. But strange as it may seem, even today several princes of the Church suffer under wrongs due to the sea-serpent.

In 1522 the whole of Scandinavia was in turmoil. In Denmark the noblemen of Jutland, helped by the Hanseatic League, rebelled against King Christian II, accusing him of tyranny, and put Duke Frederick of Holstein upon his throne. Christian had to flee his country and take refuge with his brother-in-law Charles V of Germany. A little earlier a young Swedish nobleman, Gustav Eriksson Vasa, had raised an army against him, broken the old union between Sweden, Denmark and Norway, had himself proclaimed King of Sweden, banished a hostile archbishop and introduced Protestantism into Sweden.

In the spring of 1523, while Christian and his court settled at Lierre in Flanders, the Swedish Archbishop Johannes Mansson (latinized as Magnus) sought asylum in Rome with his younger brother Olaf, who inherited his title when he died in 1544. The new Catholic Archbishop of Uppsala, unable to take up his duties in exile, set about telling the world about the land he had lost.

In 1539, Olaf Mansson, now known as Olaus Magnus, published in Venice a very carefully-drawn map of the northern lands (Plate 11). In the sea, which teems with terrifying monsters, one can recognize two sea-serpents. But it was in a later book, *Historia de gentibus septentrionalibus*, printed in Rome in 1555, that he gave more information about them. Unfortunately the natural history in the book is based on accounts, often garbled, of other Scandinavian exiles, and also, from loyalty to the Church, on the even more dubious zoological writings of the Early Fathers. The following passage is quoted from the English edition, *A Compendious History of the Goths, Svvedes, and Vandals, and Other Northern Nations*, which appeared 103 years after the original:



15. Olaus Magnus's *Soe-Orm*, 1555

> They who in Works of Navigation, on the Coasts of *Norway*, employ themselves in fishing or Merchandise, do all agree in this strange story, that there is a Serpent there which is of a vast magnitude, namely 200 foot long, and moreover 20 foot thick; and it is wont to live in Rocks and Caves toward the Sea-coast about *Berge*[*n*]: which will go alone from his holes in a clear night, in Summer, and devour Calves, Lambs, and Hogs, or else he goes into the Sea to feed on Polypus, Locusts, and all sorts of Sea-Crabs. He hath commonly hair hanging from his neck a Cubit long, and sharp Scales, and is black, and he hath flaming shining eyes. This Snake disquiets the shippers, and he puts up his head on high like a pillar, and catcheth away men, and he devours them; and this hapneth not, but it signifies some wonderful change of the Kingdom near at hand; namely that the Princes shall die, or be banished; or some Tumultuous Wars shall presently follow.

To support this statement, the archbishop tells of an event, which happened recently, but in fresh water:

> There is also another Serpent of an incredible magnitude in a Town, called *Moos* [i.e. Lake Mjösa], of the Diocess of *Hammer*, which, as a Comet portends a change all the World, so, that portends a change in the Kingdom of *Norway*, as it was seen, *Anno* 1522. that lifts himself high above the Waters, and rouls himself round like a sphere.[1] This Serpent was thought to be fifty Cubits long by conjecture, by sight afar off: there followed this the banishment of King *Christiernus*, and a great persecution of the Bishops; and it shew'd also the destruction of the Countrey.

Be that as it may, there is no doubt that one prelate of the Church was, if not actually persecuted, ridiculed for centuries for having rashly written a few lines about the sea-serpent. It was Olaus Magnus himself.

We may smile at His Eminence's naïveté, but it should not surprise us. It was natural enough in the sixteenth century to associate two remarkable events and see one as a cause of the other.[2] Moreover coincidences are sometimes so striking that even today one needs a good dose of common sense not to draw superstitious conclusions from them. For instance the fishing-boat *Aristea* was wrecked and sank soon after catching the first coelacanth, and a dozen years later Captain Hunter's schooner caught the second of these living fossils, only to be destroyed in a cyclone a fortnight afterwards. 'Did Coelacanths', asks Professor J. L. B. Smith with his tongue in his cheek, 'bring destruction in their train?' And we do not take the idea seriously. But if a popular journalist had been telling the story, he might well have spoken of this 'evil fish' or 'accursed monster', and a legend would have been born, like that of the story of the curse on the archaeologists who violated the tomb of Tutenkhamen.

Olaus Magnus's tale of terrifying sea-serpents is repeated without much change by the great encyclopaedists of the Renaissance, Gesner (1560), Topsell (1609), Aldrovandi (1640), Jonston (1653) and Charleton (1668). Gesner, however, in his *Nomenclator aquatilium animantium*, distinguishes two very different kinds of large marine serpents, one of which was harmless. He seems to base this distinction primarily on the pictures on Olaus Magnus's map of 1539.

> In the Baltic or Swedish Ocean [he writes] there are certain yellowish sea-serpents, thirty to forty feet in length, which, if they are not provoked, do no harm to anybody. Olaus Magnus gives the following representation of these sea-serpents on his map of Scandinavia [Fig. 16].

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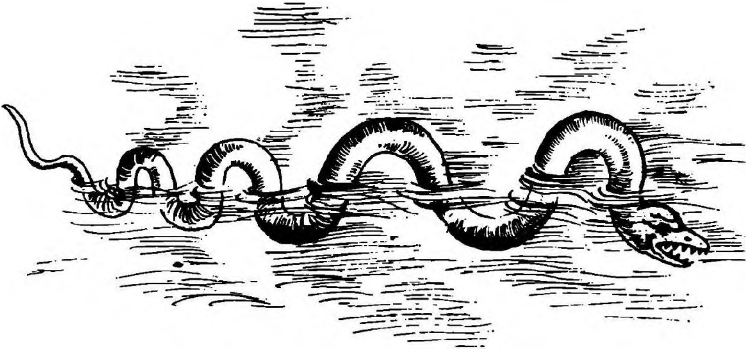
[1] Dr Oudemans, in his monumental book on the sea-serpent, has suggested that the Latin word in the original here, 'sphaerae', should be 'spirae' so that the translation would read 'round in coils'.

[2] If the banishment of King Christian was a consequence of the sea-serpent, this book can be seen as a consequence of that banishment. At all events my ancestors were among those who followed him into exile, eventually settling in Flanders. Such are the remote connections of coincidence.



16. The sea-serpent drawn in the Baltic on Olaus Magnus's map according to Gesner, 1560

Oddly enough, on the original map (which was much copied) the serpent in question is not in the Baltic but in the sea around Bergen. This seems to have been a mistake of Gesner's. He goes on:

> On the same map there is another sea-serpent a hundred to two hundred feet long (according to the text, but three hundred feet according to the number on the picture), which sometimes appears in fine weather off the Norwegian coast and is dangerous to seamen for it seizes men off the decks of boats. Sailors tell how it embraces boats as big as the merchant vessels built on our rivers and boats by forming a circle around them and that the boat is then turned upside down. This serpent sometimes forms such large coils above the water that a boat can pass under one of them. I reproduce the picture as it appears on the map [Fig. 17].

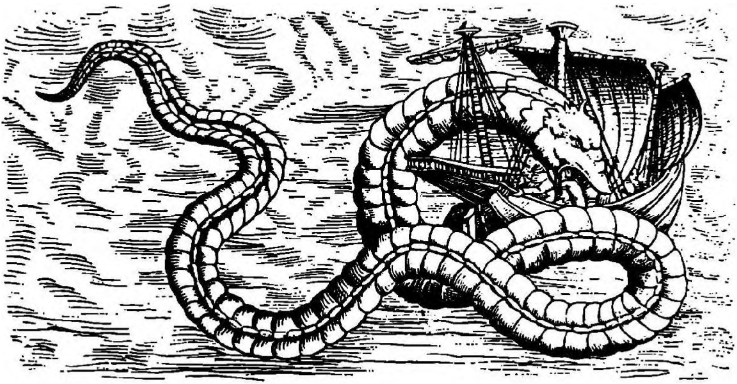
In the original version this dangerous serpent is shown some way to the north of the other. But Gesner is rash to read anything into the exact position of the monsters on Olaus Magnus's map, for they seem to have merely been put where they fitted into the picture best.

Perhaps Gesner had heard reports of northern sea-serpents which had none of the savagery attributed to them by the Ancients. Rather than contradict the old authorities he naturally assumed that such different accounts must apply to different animals.

There is little doubt that as time passed the stories of sea-serpents lost their aura of terror. In 1656 Arent Berntsen still maintained in his *Danmarkis og Norgis fructbar Herlighed* (Upon the Fruitful Splendours of Denmark and Norway) that these sea-monsters attacked and sank ships. But ten years later Adam Ölschläger (latinized as Olearius), keeper of the Duke of Holstein's

Cabinet of Curiosities, mentioned the great sea-serpent in very sober terms in his *Gottorffische Kunst-Kammer*:

> That this is true has not long ago been confirmed by a Swedish nobleman at Gottorf, who declared to have heard from the Burgomaster of Malmö, a trustworthy man, that, whilst standing on a hill on the Norwegian coast, he saw in the calm water a large serpent, which seen from afar, had the thickness of a wine barrel, and 25 windings. These serpents are said to appear on the surface of the water only in calm weather and at certain times.



17. The sea-serpent drawn off Helgeland on Olaus Magnus's map, according to Gesner, 1560

The historian Jonas Ramus was no less matter-of-fact and circumstantial in his history of ancient and pagan Norway, *Nori Regnum*, which first appeared in Latin in 1689:

> Anno 1687, a large Sea-snake was seen by many people in Dramsfiorden; and at one time by eleven persons together. It was in very calm weather; and so soon as the sun appeared, and the wind blew a little, it shot away just like a coiled cable, that is suddenly thrown out by the sailors; and they observed that it was some time in stretching out its many folds.

From the end of the seventeenth century hardly anyone but poets and preachers still described the sea-serpent as savage and dangerous like the great leviathan. Thus the Danish bard Petter Dass (1647–1708), a popular writer and a priest, still writes of it as an object of terror, though not without a hint of irony:

Upon the Sea-Worm is my knowledge slight,
For I have seen him not. And such a sight
  Is hardly an honour I wish.
But many men whose word I don't dispute
And well believe, have told me that the brute
  Is truly the fearfullest fish.[1]

The 'sea-worm' was a common Scandinavian name for the sea-serpent, 'worm' having no very exact meaning and already including dragons. It meant any long winding beast and was perhaps a better description than the more usual 'serpent', in that the animal was moving in a very peculiar way for a snake.

One is naturally chary of trying to extract much information from the old Scandinavian texts, but there are some features that are reported with striking unanimity. Everyone seems to agree that the sea-serpent appears only in fine calm weather. If it were really a mythical nightmare, as some maintain, it would surely have been set in the night and storm which Gustave Doré drew for his leviathan (Plate 5). The spume of wild waves and the glare of lightning would be a better setting for a monster that had broken out of Hell than a smooth sea and sunny sky.

It is also interesting to note that this feature of the great sea-serpent is in direct contradiction to what we know about true sea-snakes in tropical waters. 'During calm weather they are seldom seen,' say Curran and Kauffeld, two American experts on herpetology, 'but when the sea becomes rough and choppy they are usually much in evidence, the sea appearing to be alive with them.'

The second feature reported with a remarkable consistency concerns the animal's shape, and is much more disconcerting. It is natural enough for a serpent to be described as forming rings, coils or spirals, and since the animal looked like a serpent when it appeared on the surface it was described as one. But in the pictures, as in the descriptions, the Norwegian sea-serpent always undulates its body *up and down.* Of course most primitive or childish pictures show snakes wriggling in the same way, but this is simply because it needs some skill in perspective to draw the side view of an animal that

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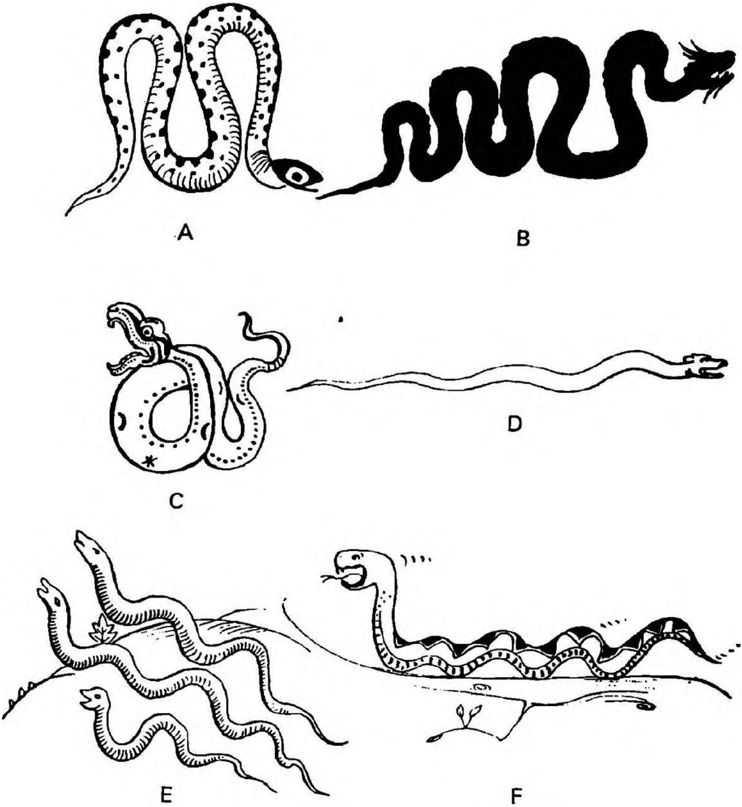
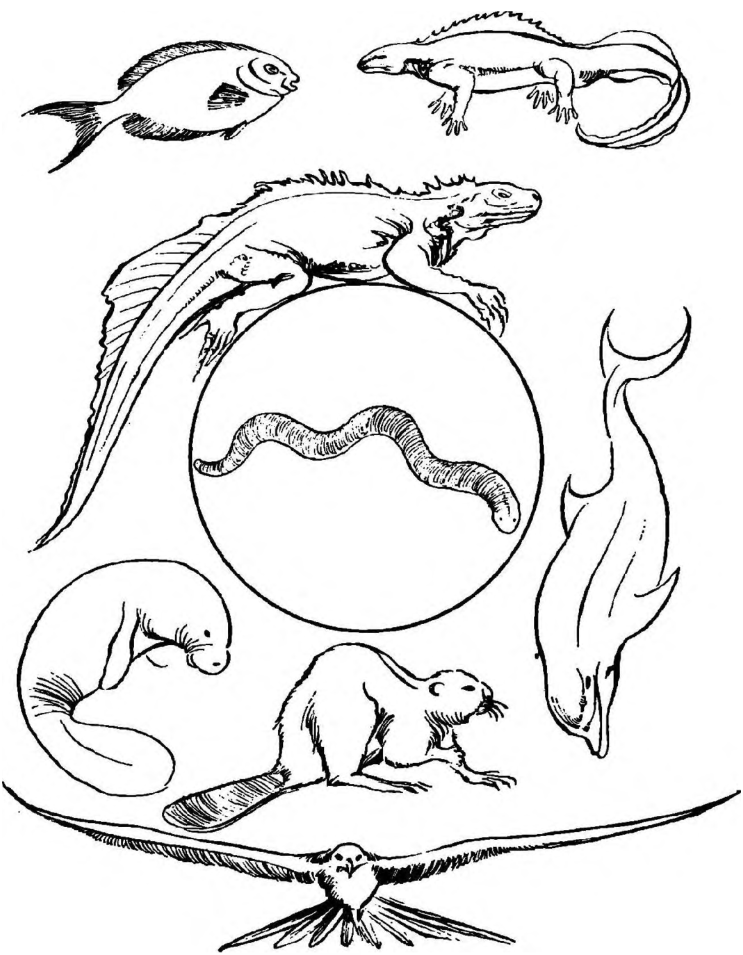
[1] This somewhat halting if reasonably close version has been preferred to a more elegant but inaccurate one given by Pontoppidan's translator. The Danish original runs:

Om Sœ-Ormen veed jeg ej nogen Beskeed
Jeg haver ham aldrig med Oynene seed,
  Begærer ej heller den Ære,
Dog kiender jeg mange, som mig have sagt,
Hvis Ord jeg og giver sandfærdelig Magt,
  Han maa ret forfærdelig være.

[Translator's note.]



18. Snakes are traditionally shown undulating vertically: A. Egyptian papyrus; B. Pompeian fresco; C. Maya codex; D. 12th century bestiary; E. 16th century medical work; F. modern humorous drawing



19. The tail spreads vertically in swimming vertebrates that undulate horizontally, like the fish, newt and water lizard (*top*); and in the horizontal plane in swimming mammals, like the manatee, beaver and dolphin, as well as in the birds, which all undulate mainly vertically (*below*). The burrowing amphisbaena (*in the circle*) is the only 'reptile' which can undulate in all directions

wriggles horizontally. In fact, whether they are on land or in the water, snakes always wriggle *from side to side*. Generally speaking *all* fish, amphibians and reptiles move by undulations that are purely horizontal, whatever medium they are in.[1]

Contrary to what one might think, moving by means of vertical 'wave-motion' is not confined in other zoological groups only to such creatures as caterpillars and millipedes. In fact all the mammals and the birds undulate mainly in a vertical plane: they may, with the more supple articulation of their spines, bend in all directions, but the chief component of their motion is vertical. This is particularly striking in aquatic mammals—otter-shrews, otters, beavers, manatees and dugongs, seals and sea-lions, and whales—which swim under water almost entirely by means of sinuous vertical movement. This varies, of course, according to the suppleness of the spine and the length of the tail: otters sometimes swim in corkscrew fashion. In all these animals their predominantly vertical movement is revealed by the shape of the tail which tends to flatten and spread horizontally, while in the fishes, amphibians and reptiles the tail is always flattened laterally. This is especially noticeable if one compares the tails of fishes and whales.

To see how birds 'undulate' in the same plane as mammals one need only look at the S-shaped necks of swans, herons, snakebirds, ostriches and so on, and see how the tail-feathers fan out horizontally.

It is rather remarkable that no comparative anatomist has hitherto pointed out this fundamental difference between the two great types of vertebrates. One is supposed to have derived from the other, yet they evolved in opposite directions, as can be seen from basic differences in their structure: the shape and arrangement of their vertebrae, allowing them to move freely in one particular plane, a particular attachment of muscles for this purpose and a nervous system co-ordinating their movements in their chosen plane.

Therefore if a sea-serpent really undulates up and down, as has been said, it must be a warm-blooded animal and thus presumably a mammal. But apparently it would be a most extraordinary mammal since it is sometimes said to have twenty-five humps or even more. No doubt this is very exaggerated, but even if the number were reduced by half we are still a long way from the three or four bends which are the very most to be found in the most elongated swimming mammals: otters and otter-shrews.

Perhaps the great number of humps in the great sea-serpent is the result of the naïveté or incompetence of the illustrators. Gesner's picture of his 'Baltic' serpent certainly leads one to think so, for the way the animal floats almost entirely out of the water would be mechanically impossible for anything but a balloon.

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[1] There is one exception to this rule: the amphisbaenas, burrowing animals like fat earthworms which are usually classified alongside the lizards among the reptiles. They move in a straight line, or even in vertical undulations! But they are animals with such peculiar anatomy in all respects that Schmidt and Inger, whose book *Living Reptiles of the World* (1957) is the authority on the subject, call them 'a group of animals we are not positive are reptiles, let alone lizards'. And Charles M. Bogert (1964) calls them 'a taxonomic enigma'.

One might suppose the sea-serpent was drawn with many vertical undulations because it was thought to be a snake and therefore drawn as a snake is drawn by an artist ignorant of perspective. But this is not so, for we shall see that many witnesses stress this strange characteristic. It cannot be a matter of artistic convention.

If those who saw sea-serpents in the past had been informed zoologists they could not have mistaken them for true serpents. Perhaps one reason for doing so was that the beast held its head above the water 'on high like a pillar' and had a long neck of equal thickness throughout. All we know so far is that the northern sea-serpent, though no serpent, was serpentiform in the front of its body.

In 1741 another Scandinavian priest, a Protestant this time, appears as a witness. Hans Egede, known as the Apostle of Greenland, founded a missionary colony in that land. He was a pious and honest man, if we judge by his work as a whole, and he seems to have had an observant mind and keen interest in natural history. There is nothing sensational or exaggerated about his descriptions: they are meticulous, sober and rather dry. There is a strong sense of reality about the picture he gives us of a sea-animal, serpentiform at least in part, in his *Det gamle Grønlands nye Perlustration* (1741). I quote from the English edition, *A Description of Greenland* (1745):

> As for other Sea Monsters ... none of them have been seen by us, or any of our Time, that ever I could hear, save that most dreadful Monster, that showed itself upon the Surface of the Water in the Year 1734,[1] off our New Colony in 64 Degrees.
>
> This Monster was of so huge a Size, that coming out of the Water, its Head reached as high as the Mast-Head; its Body was bulky as the Ship, and three or four times as long. It had a long pointed Snout, and spouted like a Whale-Fish; great broad Paws, and the Body seemed covered with shell-work, its skin very rugged and uneven. The under Part of its Body was shaped like an enormous huge Serpent, and when it dived again under Water, it plunged backwards into the Sea, and so raised its Tail aloft, which seemed a whole Ship's Length distant from the bulkiest part of its Body.

The translation is not entirely accurate—though it is far better than the French or German versions—and the word translated as 'shell-work' (*Skiæl*) really means carapace. The length of the beast, as far as we can judge from that of the ships then used, must have been about 100 feet.

To illustrate Povel Egede's *Continuation af Relationerne Betreffende de*

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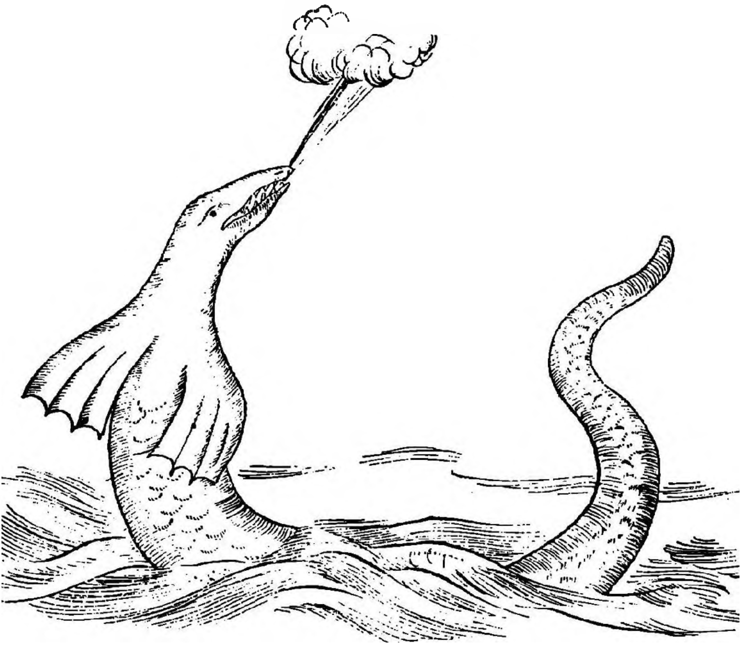
[1] Egede's son Povel, who was present and who wrote a continuation of his book, gives the date as 6 July.



20. Hans Egede's 'most dreadful Monster', after Pastor Bing

Grœnlandste Mission, another missionary called Bing, who accompanied the apostle, drew a map of the voyage, and this included a detailed picture of 'that most dreadful Monster' which completes its description admirably (Fig. 20). The sketch is clearly intended to be exact and must have been drawn from nature soon after the encounter, for, according to Bishop Pontoppidan, Bing told his own brother-in-law, Pastor Sylow, that the animal's eyes seemed to him to be red and like fire.[1]

Neither of the Egedes called the beast a 'sea-worm' or sea-serpent, and in any case it had 'great broad Paws' ('flippers' might be a better translation) which would make such a name absurd. All the same most modern writers have thought it was one of the creatures that then went by this rather unsatisfactory name.

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[1] Just as the translations of both the Egedes' books are full of mistakes, so are the second-hand versions of the illustration, redrawn from Bing's original, in which the skin, which had been rough, is covered with very distinct scales and the spout 'like a Whale-Fish' becomes a huge jet of water gushing out of its mouth.

This is by no means certain. While Olaus Magnus's animal was serpentiform in its head and neck, only the tail is so in Egede's monster, which, with its rather short and narrow neck, could not have lifted its head above the water 'on high like a pillar', nor could its thickish body have undulated up and down twenty-five times.

Bishop Pontoppidan, our next witness, was right to say, 'There are sea-serpents, as there are other fish, of different kinds.'

Erik Ludvigsen Pontoppidan, Bishop of Bergen, devoted an important chapter of *The Natural History of Norway* (published in Norwegian in 1752 and 1753) to some monsters of the northern seas: the mermaid, the *kraken* and the sea-serpent. The bishop has already been shown to be right in thinking the mermaid and the *kraken* to be real animals, for the first was based on distorted descriptions of dugongs and seals, and the second on the giant squid. It would be strange if Pontoppidan, so careful in his inquiries and usually so prudent in his conclusions, were quite mistaken about the third and perhaps least unlikely of his monsters.

There had already been several circumstantial reports published, which led him to make a thorough inquiry among his flock. He found that sea-serpents had been seen countless times along the Scandinavian coasts. Hardly a year went by without its being seen at sea. Dead ones had been washed up at Amunds-Vaagen (Nordfjord) and on the island of Karmen. Each time the rotting carcase had raised an unforgettable stench. In the far north of Norway it proved to be well known as the *Sæ-Orm* (sea-worm) and sometimes as the *Aale-Tust*.[1] Hundreds of witnesses gave their bishop fairly similar descriptions. Those who had not seen it themselves could always mention some luckier relative who had done so. The bishop, who had begun by being sceptical, found that whenever he cast any doubt on the beast the seamen smiled and shrugged their shoulders as if he were questioning whether there were such fish as herring or cod.

All the same some fantastic things were believed about the sea-serpent. Some said it was several hundred yards long, it had a horse's head with a crocodile's teeth, eyes that flashed lightning, and a splendid mane, to say nothing of blowing as wildly as the roar of the tempest.

This did not prevent others from suggesting very commonplace uses for the skin. Like its supposed relatives, the land-snakes, it was said to slough its skin regularly. The story went that an inhabitant of Kobbervueg had found a skin on the rocks and made a tablecloth of it.

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[1] This name, which means 'tuft of eels', seems to refer to the *kraken*, whose many arms are like a bunch of eels, and suggests that there was some confusion in Norway between the two monsters—unless the name means 'Tufted eel'. This might be equivalent to 'King of the eels' in the same way that the oarfish was sometimes called *Sild-Konge* (King of the herrings) in Norwegian and sometimes *Sild-Tust*.

Generally speaking eye-witnesses treated the monster more respectfully and more modestly. The least doubtful encounter of the period is undoubtedly that of Captain Lorenz von Ferry, who at Pontoppidan's request sent an official letter to Procurator Johann Reutz, who read it in public before the Court of Justice at Bergen. It ran as follows:

> Sir, in the latter end of August, in the year 1746, as I was on a voyage, on my return from Trondhjem, on a very calm and hot day, having a mind to put in at Molde, it happened that when we had arrived with my vessel within a mile of the aforesaid Molde, being at a place called Jule-Naess, as I was reading in a book, I heard a kind of murmuring voice from amongst the men at the oars, who were eight in number, and observed that the man at the helm kept off from the land. Upon this I enquired what was the matter, and was informed that there was a sea-serpent ahead of us. I then ordered the helmsman to keep the land again, and to come up with this creature of which I had heard so many stories. Though the fellows were under some apprehensions, they were obliged to obey my orders.
>
> In the meantime the sea-snake passed by us, and we were obliged to turn the vessel about in order to get nearer to it. As the snake swam faster than we could row, I took my gun, which was loaded with small shot, and fired at it; on this it immediately plunged under water. We rowed to the place where it sank down (which in the calm might be easily observed) and lay upon our oars, thinking it would come up again to the surface; however, it did not. Where the snake plunged down, the water appeared thick and red; perhaps the small shot might have wounded it, the distance being very little.
>
> The head of this sea-serpent, which it held more than two feet above the surface of the water, resembled that of a horse. It was of a greyish colour, and the mouth was quite black, and very large. It had large black eyes, and a long white mane, which hung down to the surface of the water. Besides the head and neck, we saw seven or eight folds, or coils, of this snake, which were very thick, and as far as we could guess there was a fathom's distance between each fold.[1]
>
> I related this affair in a certain company, where there was a person of distinction present, who desired that I would communicate to him an authentic detail of all that happened; and for this reason two of my sailors who were present at the time and place where I saw this monster, namely, NIELS PETERSEN KOPPER, and NIELS NIELSEN ANGLEWIGEN, will appear in court, to declare on oath the truth of every particular herein set forth; and I desire the favour of an attested copy of the said description.
>
> I remain, Sir, your obliged servant,
>
> L. von FERRY.
>
> Bergen, 21st *February*, 1751.

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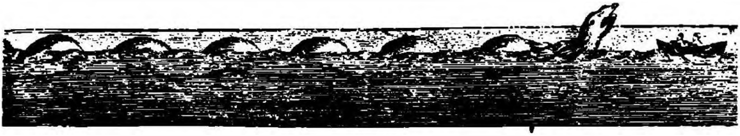
[1] This description became traditional. See, for instance, *Beskrivelse over Finmarkens Lappen* by Pastor Knud Leems (Canutus Leemius).

When this had been solemnly read before the Stadtholder and Councillor and other dignitaries, the two sailors swore upon oath, one hand on the Bible and one pointing to heaven, that every word was true. It is hard to imagine a court of law risking making a fool of itself if there had been the least reason to suspect Ferry's veracity.

Another important person who, according to Pontoppidan, was able to watch a sea-serpent, was Governor Benstrup, who drew a picture of the beast from life. The bishop would have liked to reproduce it, but could not obtain it and had to be content with another sent him by Pastor Hans Ström, who had had it drawn from the descriptions of two of his neighbours at Heröy, called Reutz and Tuchsen, who had often seen an animal of this sort when going to church by boat. These two men also confirmed their account directly to Pontoppidan, who adds:

> Mr Tuchsen ... is the only person of the many correspondents I have, that informs me he has observed the difference between the body and the tail of this creature as to thickness.
>
> It appears that this creature does not, like the Eel or Landsnake, taper gradually to a point, but the body, which looks to me as big as two hogsheads, grows remarkably small at once just where the tail begins.



21. Governor Benstrup's sea-serpent, after Pastor Hans Ström

This feature confirms that the Scandinavian sea-serpent is most unlikely to be a true snake, in which the beginning of the tail is hardly noticeable.

The many bends in its body, which Ferry, as usual, took for a snake's coils, and which are drawn very scrupulously on Ström's picture, are described by too many serious witnesses to have been invented. 'These at a distance', writes Pontoppidan, 'appear like so many casks or hogsheads floating in a line, with a considerable distance between each of them.' In future I shall speak of such sea-serpents appearing 'as a string of buoys', and we shall find all sorts of theories put forward to explain these strange lines of humps, which, whatever they are, cannot be part of a true snake.

Bishop Pontoppidan concluded from the dates of the various sightings that the sea-serpent remained at the bottom of the sea all the time except in July and August, which must be its spawning time. Then it came to the surface in calm weather, but dived again as soon as there was the least swell.

No one had had a chance of measuring the beast exactly, but some witnesses' answers led him to think that it might be as much as a cable in length, that is to say about 600 feet. This is undoubtedly very much exaggerated, or even the result of confusion about the units of length used.[1] The bishop's comments about the beast's appearance deserve greater attention.

> The whole animal is of a dark-brown colour, but it is speckled and variegated with light streaks or spots, that shine like tortoise-shell. It is of a darker hue about the eyes and mouth than elsewhere.

The bishop's description is blurred by confusion between several kinds of large serpentine beasts which may have little in common. He seems to realize this when he says:

> I do not find by any of my correspondents, that they [sea-serpents] spout the water out of their nostrils like the Whale, only in that one instance related by Mr. Egede.

Moreover he is certain that Egede's animal is quite different from his own Norwegian sea-serpent.

> Those on our coast differ likewise from the Greenland Sea-Snakes, with regard to the skin, which is as smooth as glass, and has not the least wrinkle,[2] but about the neck, where there is a kind of mane, which looks like a parcel of sea-weeds hanging down to the water.

Although reptiles are usually covered with scales and thus do not have skin 'as smooth as glass', Pontoppidan thought that the sea-serpent was a true serpent and sloughed its skin regularly like the rest of them. It is true that he rejected the tale of the Kobbervueg man who made a tablecloth from a skin found on the rocks because he could get no confirmation of it. But he accepted without question Thorlack Thorlacksen's story of finding a similar skin in a creek in the same region in 1720 after a sea-serpent had spent a whole week there. The skin was too soft and slimy to put to any household use. Probably the skin had nothing to do with the beast in the creek, the skin of a giant squid washed up on the shore, for instance.

Pontoppidan went so far as to maintain that the whole of the beast's body was equally soft, because some sailors, who thought they had caught a young sea-serpent, saw their catch disintegrate on the boat's deck into a mass of sticky and disgusting jelly. This reminded the bishop of a similar adventure described by the missionary Father Jean-Baptiste Labat in 1722 in his *Nouveau Voyage aux Isles de l'Amérique*. The crew had caught a 'sea-serpent' barely 4 feet long and as thick as a man's arm:

> We tied it to the mast after having stunned it so that we could see what it looked like next day. We knew how great was our fortune not to have touched this fish,

---

[1] If we apply von Ferry's dimensions to Ström's drawing we find that it is only about 50 feet long, which also agrees with the size of the men in the picture.

[2] A sailor from the north told him that he was once 'so close to the serpent that he might have touched its smooth skin'.

> which no doubt would have poisoned us all. For we found next day that it had entirely dissolved into a greenish and stinking liquid, which had run over the deck, so that hardly anything was left but skin and remains, although in the evening before it had seemed to us very firm and very good. We concluded that either this fish had been poisoned by accident, or that it was by nature composed of nothing but venom. I think it is some kind of sea viper. I have spoken of it to several fishermen and other seamen, without having been able to be enlightened upon what I want to know touching this fish.

In both cases I suspect that it was a small oarfish, which is well known for its weak flesh that decomposes rapidly, or a fish of the same family. But at this time the oarfish was still unknown to science.

Pontoppidan had other reasons for thinking that the sea-serpent itself was no less frail and delicate. He thought that it only came to the surface in fine calm weather for fear the wind should blow it to pieces. It is all very well to smile at this notion—which was strengthened by the capture of a few oarfish, but even today most people believe that fish from the great depths explode under their own pressure when they are brought to the surface. This is quite untrue, only their blood-vessels burst and their swim-bladder swells until it pushes the stomach out through the mouth. If fish from the deep are often in a poor state when they are caught it is because they are usually fragile and have been dragged along the bottom in a trawl.

The Bishop of Bergen drew a clear distinction between 'true' sea-serpents—which included all unknown serpentiform marine animals—and other sea-monsters, such as Egede's beast and those in two other reports which he confines to footnotes. Here is the first:

> A fisherman at Sundsland, two miles from Bergen, told me he had once seen a much more surprising Sea-monster close to his boat; having just taken a view of the fishing-boat, it dived under the water immediately. This was not unlike a Sea-calf [seal] as to the fore-part, and had furred skin. The body was broad and big as a vessel of 50 lasts burthen; and the tail, which seemed to be about six fathoms long, was quite small and pointed at the end.

This is remarkably like 'that most dreadful Monster' described by Egede. The seal's head is very like the pointed snout drawn by Bing. The furred skin could have looked 'rugged and uneven' to the missionaries. The long thin tail and the same—if enormous—dimensions are reported by each. The bishop's beast must have been a mammal and thus had finned feet or flippers, what Egede called 'great broad Paws'.

I shall not attempt to identify this animal yet. But without anticipating what is to follow it seems at first glance to be related to the seals or the otters. It is obviously an unknown species. There is no known seal with so long a tail, nor otter of anything approaching such gigantic size. But there is nothing odd in describing so sinuous a creature as an otter as a serpent. Its very name, 'otter', derives from the Greek *hydra* and Sanscrit *udras*, which originally meant 'water-snake'.

Although Pontoppidan made a clear distinction between the Norwegian sea-serpent and the 'super-otter' seen in Greenland and at Sundsland, he talks of them both as 'serpents'. This error must have been very widespread, since one had a serpentine neck and the other a serpentine tail. It seems likely that several reports collected by the bishop actually concerned animals like that seen by the missionary, and this may explain the confusion about some details in the description of the great sea-serpent.

Thus Pontoppidan writes:

> The head in all the kinds has a high and broad forehead, but in some a pointed snout, though in others that is flat, like that of a cow or a horse, with large nostrils, and several stiff hairs standing out on each side like whiskers.

While the pointed snout seems to belong to the Greenland beast and the horse's head and whiskers to the Norwegian type, the high forehead seems to show that they are both mammals.

The second report that Pontoppidan consigns to a footnote is no less interesting:

> There is a report, but not altogether to be depended upon, that some peasants at Sundmœr have catched a Snake lately in a net, which was three fathoms long, and had four legs: this must somewhat resemble a Crocodile. The peasants ran away frightened, and left the Snake to do the same.

Because of its four legs the Bishop of Bergen did not think that this strange animal was a specimen of his sea-serpent. But he was certainly wrong. There is every reason to think that most large serpentine sea-animals *must* have limbs, if only one pair. This is probably the only report we have of a young sea-serpent being caught by accident.

I am deliberately stressing the diversity of the descriptions of sea-monsters that began in the eighteenth century, and which were *all* considered as sea-serpents sooner or later. In the centuries that followed the same errors were repeated and the same misconceptions only became worse. If we are not to lose our way we must mark the false trails as soon as they appear.

The problem of the great sea-serpent was presented to the naturalists by three Scandinavian clerics: Olaus Magnus, Hans Egede and Erik Pontoppidan. The first spoke of it as a real animal, though still with an aura of terror and popular legend, the second gave a sober description of quite a different animal, and the third rashly talked as though the two species were closely related. As a result the whole affair was muddled from the start.

Nevertheless Pontoppidan's vast labour of breaking new ground deserves our sympathy. His chief merit is that he did his best to strip the *Sæ-Orm* of its nightmarish frills which prevented it from being taken seriously. It was an act of courage to tackle the monster and dissect it like a common frog.

> I return again [he writes] ... to the most interesting inquiry concerning them, which is Whether they do mankind any injury? And in what manner they may hurt the human species? Arndt. Bernsen, in his Account of the Fertility of Denmark and Norway, p. 308, affirms that they do; and says, that the Sea-snake, as well as the Trold-whale, often sinks both men and boats. I have not heard any account of such an accident hereabouts, that might be depended upon; but the North traders inform me of what has frequently happened with them, namely, that the Sea-snake has raised itself up, and thrown itself across a boat, and sometimes even across a vessel of some hundred tons burthen, and by its weight has sunk it down to the bottom. One of the aforesaid North traders, who says that he has been near enough to some of these Sea-snakes (alive) to feel their smooth skin, informs me, that sometimes they will raise up their frightful heads, and snap a man out of a boat, without hurting the rest: but I will not affirm this for a truth, because it is not certain they are a Fish of prey.

Pontoppidan had reason to be sceptical. It is clear that the sea-serpent was confused in the popular mind with the *kraken*, for no circumstantial report has ever told of men being carried off in this way, as if by Homer's Scylla.

But this does not mean that an animal as vast as the Scandinavian sea-serpent might not be dangerous in some circumstances. The big whales are as a rule very peaceable, but this does not mean they cannot endanger a rowing-boat or even a ship. Angry sperm-whales have been known to smash metal hulls with their heads and sink them in a few minutes, and wounded whales have shattered whale-boats loaded with men. The Grey Whale (*Eschrichtius*) sometimes attacks without apparent provocation, perhaps to protect its mate or young unnoticed nearby: it charges with its head, gives terrible blows with its muscular tail and even tries to bite with its toothless jaws. If it capsizes a boat it may even attack the men in the water.

And what about sea-serpents?

> It is said [writes Pontoppidan] that they sometimes fling themselves in a wide circle round a boat, so that the men are surrounded on all sides. This Snake, I observed before, generally appears on the water in folds or coils; and the fishermen, from a known custom in that case, never row towards the openings, or those places where the body is not seen, but is concealed under the water; if they did, the Snake would raise itself up, and overset the boat. On the contrary they row full against the highest part that is visible, which makes the Snake immediately dive; and then they are released from their fears.

But the bishop adds that it is better to row hard for the coast and take refuge in some inaccessible creek as soon as one sees the monster. It is useless to try to escape in the open sea, for the sea-serpent moves with the speed of an arrow. It is better to throw everything you can lay your hands on at its head, for as soon as you touch it it dives and makes off.

> Of late [concludes Pontoppidan] our fishermen have found the way, in the warm Summer months, of providing themselves with castor, which they always carry with them when they go far out to sea: they shut it up in a hole in the stem, and if at any time they are particularly apprehensive of meeting with the Sea-snake, they throw a little of it over-board; for by frequent experience they know of a certainty, that it always avoids the drug.

This story of the sea-serpent's aversion to *castoreum* or musk, seems to me of the greatest interest. It may appear absurd and like a magic charm to the layman, but the fact is that it is connected with zoological ideas which were certainly unknown in Pontoppidan's day. The skin of cephalopods contains glands which secrete an oily substance that smells strongly of musk—as a result of which one of them is called *Eledone moschata* or Musk-octopus. It may well be that, like the great whales, the sea-serpent, whatever it may be, has no greater enemy than the giant squid. It is less well armed than the sperm-whale, and so no doubt flees from the squid's tentacles. The peculiar smell of the squid's family would cause it to make off at full speed.

The habits reported by Pontoppidan need not necessarily apply only to the Norwegian sea-serpent with its mane and shining eyes. They might be based, in part at least, upon Egede's super-otter or even upon other sea-monsters. The bishop oversimplifies by putting the 'true' sea-serpent off the coast of Norway and considering Egede's beast as a neighbouring species, peculiar to Greenland. But the Sundsland fishermen showed that it was also seen near Bergen.

Nor does the so-called Norwegian sea-serpent seem to have been confined to Norwegian waters. The old Icelandic chronicles and legends often tell of various water-monsters seen around the island. Eggert Olafsen, the geographer, may have been referring to the sea-serpent when he wrote in 1772:

> There is found in the gulf of Hornefjord a quantity of eels, the length and thickness of which terrify the inhabitants of this country.

These, he seemed to think, were different from the monsters seen in the River Hvita:

> In 1595 on a Sunday afternoon some of the parishioners returning from Skalholt church and crossing the river on the ferry, saw a monstrous creature as big as a house, come out of the water and make off at high speed for quite a long way down the river where it dived: its head was, according to the description in the chronicles like that of a sea-hound, its back garnished with high spines and the rump short.

> In the summer of 1636 a big serpent was often seen in this river, between the settlements at Amerbole and Oddgersholer, on the bank in the district of Flœn; nobody has given a description of this serpent but it was called *Okind*, which means monster or unknown creature.
>
> Finally, in the year 1702, there was seen on this river, a huge round shape with a back like a sea-hound in the act of diving and with its head already under water.

These descriptions might apply to an animal fairly like Hans Egede's super-otter, which from a distance could be taken for a big serpent if one could only see its tail and its head, which is not unlike that of a 'sea-hound' or seal. If such a beast were to come and wallow on land, its hair, half dried and stuck together, might remind one of 'high spines'. The short rump is rather puzzling, but if one recalls how sea-lions move on land by hunching their backs and rhythmically pulling in their hindquarters one may see what the chroniclers are trying to say. On the other hand they may just mean that the monster had no tail, in which case it must have been quite different from Egede's.

According to Icelandic legends edited by Dr Konrad Maurer in 1860 and the Rev. Sabine Baring-Gould in 1863 a *skrimsl*, or monster, lived near the little island of Grimsey off the north of Iceland. It was supposed to decapitate seals and sink ships. It was often seen in Thorska fiord rocking on the surface of the water like a big boat floating with its keel in the air. The fishermen maintained that it had ventured ashore in 1819 and had left its tracks there. Here again one is reminded of Egede's 'most dreadful Monster' which seems related to the otter or the seals—all characteristically amphibious.

It would not be surprising to find the 'super-otter' in Icelandic waters, half-way between Greenland where Egede saw it leap out of the water and the Norwegian coast where a fisherman saw one close to his boat.

Thus we see that in the middle of the eighteenth century at least two large sea-monsters, both partly serpentiform, but certainly different in anatomy, were found in northern waters and were rivals for the title of the great sea-serpent.

We may well wonder why it was that, after Classical times, the sea-serpent was seen only in Scandinavia and Scandinavian possessions before the middle of the eighteenth century, thus leading the rest of the world to think that it was due solely to the poetic Norse imagination.

In point of fact the Scandinavians are a commonsensical people with a very practical turn of mind. No doubt it is because these fine seamen voyaged over the world long before other Europeans, besides spending much time in their own waters, that the animal is found in their legends, and almost all the early sightings of the sea-serpent were made by them.

Before the Vikings the first great navigators were the Phoenicians, and it seems likely that the Jewish legend of the leviathan was based on tales these intrepid seamen brought back from the Red Sea and the Indian Ocean. Arab traders took over and confirmed the legend with their own *tennin*.

The English translation of Pontoppidan appeared in 1765 and aroused great interest, much of it rather sceptical. A British sailor, who ended his career a knight and a rear-admiral but was then plain Captain Charles Douglas, was off the coast of Lapland in H.M.S. *Emerald* in 1769, and, being a Fellow of the Royal Society, not only made some experiments to ascertain the temperature of the sea at great depths but also some inquiries about the *kraken* and the sea-serpent. On the *kraken* he drew a blank: 'the most intelligent said, they believed such never existed otherwise than in the imagination'.

> But with regard to the Stoor Worms (which I have oftener heard called Sea Worms by the Norwegians), those who totally discredited the existence of the Kraakens told me, they believed them really to exist: and a few days before I left the North Cape, the Danish missionary of the Porsanger district did me the favour, closely to interrogate the master of a Norwegian vessel, who appeared to me to be by much the most knowing man in his station I had met with in Lapland, as to those stupendous worms, as they are called. He said about six years before, he had seen three of them at once off Bergen, floating upon the surface of the sea, twelve parts of the back of the largest appearing above water; each part being in length about six feet, with intervals of the same length, so that upon the whole he judged the animal could not be less than twenty-five fathoms long, and about one in thickness. He did not pretend to ascertain the dimensions of the other two, further than their being smaller than the one thus imperfectly described, and added that four years before he saw those last, he had (near the same coast) seen a large one, but could say nothing particular as to its size. What degree of credit is due to this man's account, I submit to the judgement of the learned Society.

The Royal Society, to whom this account was read, probably gave the Norwegian captain less credit than he deserved; for despite Bishop Pontoppidan's honest attempt at rationalization the first notes of scepticism had already appeared. They were quite general by the beginning of the nineteenth century when another Scandinavian author sounded them. Peter Ascanius, the Norwegian scientist who first described the oarfish, wrote in his *Icones rerum naturalium*:

> In summer the porpoises approach the coasts and fiords. They often join together in the open sea in schools of several score, and, when the weather is calm and fine, they form a line one behind the other to leap and play: they then appear as a chain of little humps floating on the surface of the water. Certain Northern fishermen, seeing them from afar, have mistaken this sight for an immense animal and given it the name of sea-serpent.

And that was that. As one man all the disbelievers set about cutting the monster into little bits—like porpoises. Yet the Scandinavians knew porpoises well enough, and these mammals are too sportive and undisciplined to mimic a sea-serpent effectively (compare Plate 35). The scientists of that day seem to me to have had a strong but perhaps unconscious reason for their severity. Hitherto the Church had controlled science and had often abused its power, and by natural reaction the freethinkers of the eighteenth century conceived a special scorn for the poor sea-serpent, if only because it had no less than three bishops as its sponsors. Olaus Magnus, Povel Egede and Erik Pontoppidan became symbols of superstitious credulity. Indeed the Bishop of Bergen was treated as a liar as arrant as Münchhausen or Sir John de Mandeville, for who else could expect one to swallow squids several hundred yards long? The sea-serpent, an incarnation of the leviathan, could be no more than the result of the most literal and naïve interpretation of the Bible. The monster gradually became the target of rising anti-clericalism.

Thus once again the sea-serpent boded persecution for prelates of the Church. But this did not deter them, and in 1820 the Bishop of Nordland and Finmark told a British traveller, Sir Arthur Brooke, that he had not believed in the sea-serpent until he saw two of them swimming together in the Sörsund, as the narrows of Trondhjem fjord are called. He was indeed lucky no mocking aspersions were cast on his eyesight and sobriety.

A little later another British traveller, J. D. Morries Stirling, reported that for twenty to twenty-five years his friend Dr Newmann, Bishop of Bergen, had been making inquiries about the sea-serpent among the clergy of his diocese and those of neighbouring dioceses—just like poor Pontoppidan who was now such a laughing-stock.

Nor was this the end of the luckless association between bishops and sea-serpents. On 6 November 1891 the London *Times* announced the death of the Bishop of Adelaide, the Very Rev. G. W. Kennion. Three days later it had to retract the news. The premature obituary was due, it was explained, to the discovery by the bishop of the carcase of a supposed sea-serpent. Luckless bishop! By now bishops should have known that any dealings with sea-serpents were bound to end in some kind of embarrassment or distress.

What had actually happened was that Dalziel's Press Agency had received this telegram from one of its Australian correspondents:

> INFLUENZA EXTENSIVELY PREVALENT WALES VICTORIA NUMEROUS DEATHS BISHOP ADELAIDE FOUND DEAD SEA SERPENT SIXTY FEET COFFIN BAY.

The correspondent's stinginess with punctuation misled the Agency who considered the last six words 'as a separate sentence, and, judging that it was not suitable for *The Times*, we omitted it in the copy sent to you'. The *Saturday Review* had a fine time at their expense:

> Taking their own account of the matter, one would have expected them to be

> rather surprised by the words 'found dead'. Bishops are not generally 'found dead', but die—when they cannot help it—in a decorous manner, and in the presence of witnesses. And what on earth did they understand by 'the last six words' taken separately? Did they suppose that a sea-serpent had come within sixty feet of Coffin Bay, or had devastated sixty feet of the shore, or that a sea-serpent with sixty feet had invaded that cheerfully-named locality? 'Sea-serpent sixty feet Coffin Bay' seems, on the face of it, about as unintelligible a 'separate sentence' as one could well imagine. And yet one cannot help admiring the discretion of those who 'judged' that any mention of a sixty-footed sea-serpent, or a sea-serpent indefinitely connected with twenty yards, and with Coffin Bay, was 'not suitable for' the austere dignity of the *Times.*

This story, in that it tells us something of the attitude of the Press, is not for amusement only. Commander R. T. Gould, who tells it in *The Case for the Sea-Serpent* (1930), was never able to discover what the Bishop of Adelaide actually found on the beach at Coffin Bay.[1]

And this naturally leads one to ask: Has the body of a real sea-serpent ever been found?

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[1] In fact the Bishop of Adelaide found nothing, as Gould would have realized had he read Oudemans's great book more carefully. On page 574 it tells how Gilbert Bogle of Newcastle-upon-Tyne, who had himself seen a sea-serpent, wrote to the bishop for further particulars. The bishop replied that the whole story was false. Oudemans suggested it might have been a Mr Bishop who had found a carcase in Coffin Bay, but for safety's sake he included the story among the hoaxes.

5

The Stronsa Beast, 1808

(And Other Misleading Carcases)

'It's a Snark!' was the sound that first came to their ears,
And seemed almost too good to be true.
Then followed a torrent of laughter and cheers:
Then the ominous words 'It's a Boo—'

LEWIS CARROLL, *The Hunting of the Snark*

UNTIL 1750 the sea-serpent was rarely heard of except in Scandinavia. There it was considered as a real animal and elsewhere as a Norse myth. Then in the second half of the eighteenth century a dozen reports came from the Atlantic coast of North America, nearly all from Maine. 'Yankee humbug!' said the British, forgetting that one sea-serpent, alleged to be 300 feet long, was supposed to have been seen by the British on their expedition to Bagaduse,[1] so that one wonders which nation could really tell the tallest stories.

The sea-serpent was treated as an American commodity, and one of the few well-known men in England—and an Irishman at that—who believed in it was Oliver Goldsmith. When one recalls that he was reputed to be both ignorant and credulous and that Dr Johnson said, 'If he can tell a horse from a cow, that is the extent of his knowledge of zoology,' his great compilation, *An History of the Earth and Animated Nature*, published in 1774 three months after the death of its author, cannot be said to have very good references. Johnson may be right about Goldsmith's zoology—though his own was certainly no better—yet one has only to read this delightful book to see that it is written with common sense that would have been a credit to the great Doctor. Thus Goldsmith says:

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[1] The authority for this is the Rev. Abraham Cummings, who, as we shall see in the next chapter, seems a reliable witness. But I can find no confirmation of this expedition, nor where and what Bagaduse was—unless it is a mistake for Bogalusa.

> To believe all that has been said of the sea serpent, or the kraken, would be credulity: to reject the possibility of their existence, would be presumption.

Upon which John Wesley—not the least credulous or superstitious of mankind—commented, with somewhat shaky spelling, in his journal:

> Many times he exposes credulity of other writers, but falls for Bishop Pontopedan's cracken, and sea serpent, the one a mile across, the other raising himself higher than the mainmast of a man-of-war.

At this time there were virtually no British reports of the beast. Apart from the British expedition to Bagaduse I have found only one, but this one is most important. It is a mere extract of a ship's log, as dry and official as one might expect, and it is the first of a series of matter-of-fact reports that put the problem of the sea-serpent in a completely new light. On 1 August 1786 in 42° 44′ N. latitude, 23° 10′ W. longitude, that is to say in the North Atlantic, north-east of the Azores, the officer of the watch of the *General Coole* noted in his log:

> A very large snake passed the ship; it appeared to be 16 or 18 feet in length, and 3 or 4 feet in circumference, the back of a light ash-colour and the belly thereof yellow.

There are two other British eighteenth-century reports, but at second hand. The first comes from the English actor and dramatist Thomas Holcroft. In a letter written to a friend in 1799 he tells how, being on board the *Kennet*, he asked the captain and the mate about the *kraken* and found that they were positive about its existence. This encouraged him to ask 'if they had heard, or knew any thing of the sea-snake, by some called the sea-worm?'

> To this question I received a still more direct answer. The Mate, Mr Baird, who was certainly not a liar by habit, whatever mistake or credulity might make him, assured me that, about the midway in a voyage to America, in the Atlantic, he had himself seen a fish, comparatively small in the body, of from forty to fifty fathoms in length; and that it had excited a great terror in the Captain, who was well acquainted with those latitudes, lest it should sink the ship.
>
> They both related other stories, concerning the appearance of this sea-worm: asserting that it will rise out of the water as high as a common main mast.
>
> Should you ask, do you repeat these things because you think them credible? I answer no. But who can affirm he can mark out the boundaries of possibility? Some mariners treat these tales as absolutely false and ridiculous: others seriously affirm them to be true; and I think it is a duty to collect evidence, and to remain on this question as on many another, in a certain degree of scepticism.

A wiser point of view would be hard to find.

The great Samuel Taylor Coleridge seems to have held the same opinion, though unfortunately he did not put it into print. When the affair with which this chapter is chiefly concerned was at its height from 1808 to 1810 Coleridge was producing, almost single-handed, a periodical called *The Friend*, and, beginning in the issue of 25 January 1810, he wrote an obituary of Sir Alexander Ball, the distinguished sailor, who had been Governor of Malta and for whom Coleridge had acted as private secretary for ten months in 1804. The philosopher had the highest opinion of the admiral's intelligence and integrity and wrote, 'Sir Alexander Ball's opinions throughout life were those of a mind seeking after truth, in calmness and complete self-possession.' The printed text has nothing to our purpose, but in the original manuscript there is the following passage which Coleridge dictated to Sara Hutchinson:

> Having observed to me one day that the opposite errors of Credulity and Incredulity must necessarily meet in the same minds where the Persons have no other grounds for their believing a thing true, but that they have been accustomed to believe it, he added, that many curious facts and it might be important Discoveries were kept secret by the Persons who had seen them [from] the fear of exciting doubts as to their veracity or judgement. I confess, says he, knowing the general opinion concerning the relations of Egede I was asha[med] when I was then indeed a much younger man on my return from the Baltic to avow publicly that I had myself, as was actually the case, seen a Creature resembling in all respects the Monster described by Egede under the name of the Sea Serpent. He then described to me the appearance expressing at the same time the probability that the size and height might have seemed greater than it really was, and that his imagination might have mingled with the perception and have remained uncorrected from the distance and the short time the Animal remained above the water. By comparing however my Notes with the Account lately transmitted from the North of Scotland of this same Animal [I think] that Sir Alexander Ball had distrusted the accuracy of his observation without reason.

Ball had served as a junior officer in the Baltic in 1781. We thus have another British eighteenth-century report on excellent authority; but such was the climate of scepticism that Coleridge, perhaps out of tenderness for Ball's reputation, felt it prudent to preserve the discretion of the Silent Service. There is no knowing how many other valid reports we may have lost through similar prudence.

Another literary figure who claimed to believe in the sea-serpent on the strength of a rather more questionable appearance of about this time was George Borrow, the linguist and traveller, who taught himself Welsh among other languages, and described his perambulations speaking that tongue in *Wild Wales*, published in 1862. In an inn at Port Dyn Norwig he found half a dozen seamen arguing over the sea-serpent's existence. They asked him what he thought. He replied that he believed in it and was surprised that anyone there should doubt it, since it had been seen in those parts:

> 'About fifty years ago,' said I. 'Once in October, in the year 1805, as a small vessel of the Traeth was upon the Menai, sailing very slowly, the weather being very calm, the people on board saw a strange creature like an immense worm swimming after them. It soon overtook them, climbed on board through the tiller-hole, and coiled itself on the deck under the mast—the people at first were dreadfully frightened, but taking courage they attacked it with an oar and drove it overboard; it followed the vessel for some time but a breeze springing up they lost sight of it.'
>
> 'And how did you learn this?' said the last who had addressed me.
>
> 'I read the story,' said I, 'in a pure Welsh book called the Greal.'

An old man remembered the story, and that the ship was called the *Robert Ellis*. I have not sought out the Welsh original of this tale, which is strangely reminiscent of Olaus Magnus's picture of the *Sæ-Orm,* for the 'worm' could not have been so immense if it crawled through a tiller-hole. Perhaps it was an exhausted eel looking for somewhere to rest, for eels can rest out of water for a considerable time.

In France disbelief was general in 1800. Pierre Denys de Montfort was trying so hard to prove the existence of his 'colossal octopus' that he thought that it was this beast's arms that had been taken for huge serpents. All the same he adds:

> It is not that I wish to call in question here the existence of very large fish, very elongated in shape, and presenting exactly that of a snake; I recognise that these fish, even very savage ones, are often met with in the sea; and if I had to prove their existence, I would call, among other evidence, upon that of that species of sea-snake that François Leguat killed, with the help of his companions, on the rock where they had been barbarously banished off the coast of Mauritius, by the governor appointed by the Dutch at that time.

As François Leguat's 'terrible serpent' to which we shall return in due course, was clearly some kind of conger or moray eel of relatively small size we are indeed a long way from the leviathan or the sea-worm. And Denys de Montfort's final view was to refuse to accept the sea-serpent—though very politely.

Battle began between the supporters and opponents of the sea-serpent at the very beginning of the nineteenth century over the affair of the Stronsa beast, which took place near at hand in the very north of the British Isles. Many well-known people were involved, as we see from this passage from a letter that the Scottish poet Thomas Campbell wrote to a friend on 13 February 1809:

> Of real life let me see what I have heard of for the last fortnight—first:—A snake —my friend Telford received a drawing of it—has been found thrown on the Orkney Isles, a sea-snake with a mane like a horse, four feet thick, and fifty-five

> feet long—this is seriously true. Malcolm Laing the historian saw it, and sent a drawing of it to my friend ...

Telford was Thomas Telford, the famous engineer who built nearly a thousand miles of new roads and no less than 120 bridges. Laing was member of Parliament for Orkney and Shetland.

In the autumn of 1808 the body of a huge animal of strange appearance was washed up on one of the Orkney islands which was then known as Stronsa, though now generally spelt Stronsay.[1] One of the first to notice the carcase seems to have been John Peace, a farmer at Dounatoun. He declared that on 26 September of that year, having set off to fish east of Rothiesholm Point, he saw some 400 yards from the headland what at first he took to be a dead whale cast up on the rocks. His attention was drawn by the sea-birds wheeling and screaming above it.

He rowed up to see that only the middle of the animal's body was out of the water. It was no whale, for it had a long thin neck, a thin tail and several pairs of fins—or were they feet? Puzzled, he gaffed one of the fore-fins, which was bigger and broader than those at the tail, and lifted it out of the water. 'At that time', said Peace, 'the fin or arm was edged all around, from the body to the extremity of the toes, with a row of bristles about ten inches long.' He pulled out several so that he could examine them at leisure in his boat.

Another witness, George Sherar, had seen John Peace's boat coming alongside the body. But according to him it was on 20 October. Be that as it may, some ten days later a south-west gale blew up, and the waves threw the strange animal's rotting body right up on the beach.

Soon word got around on the island that a sort of sea-serpent with six 'wings' had been washed up in an inlet in Rothiesholm Bay. It was said to have a very small head, no bigger than a seal's, a very long neck and a winding tail like a lizard's. A sort of narrow mane, or hairy crest, ran right along its spine from its shoulders almost to the end of its tail. It seemed a monster from a mediaeval picture of Hell.

John Peace went back to examine the incredible animal, and measured it in spans and found it was 'about fifty-four or fifty-five feet in length'. George Sherar did likewise with a foot-rule and made it 'exactly fifty-five feet in length from the hole in the top of the skull ... to the extremity of the tail'. Finally Thomas Fotheringhame got the same result by measuring 'from the junction of the head and neck, where there was the appearance of an ear, to the tail'—and he was a carpenter who must have known how to use a foot-rule.

So far they all agreed. There were, admittedly, some points upon which the four witnesses, who were to be interrogated by two Justices of the Peace, disagreed; but they were unimportant. Therefore, to avoid tedious repetitions I shall stick mainly to the most detailed account, that of George Sherar, who took particular care to establish the truth, and supported his verbal evidence with various bits of the animal, the skull, the larger part of one of its limbs and several sections of its spinal column.

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[1] I shall stick to the older spelling, as it is the one generally used in the literature of the time.

After having told how the beast was washed up and how he had measured its length, he went on to say upon oath:

> That the length of the neck was exactly fifteen feet, from the same hole to the beginning of the mane: That he measured also the circumference of the animal as accurately as he could, which was about ten feet, more or less; and the whole body, where the limbs were attached to it, was about the same circumference: That the lower jaw or mouth was awanting; but there were some substances or bones of the jaw remaining, when he first examined it, which are now away: That it had two holes on each side of the neck, beside the one on the back of the skull: That the mane or bristles were about fourteen inches in length each, of a silvery colour, and particularly luminous in the dark, before they were dried: That the upper part of the limbs, which answers to the shoulder-blade, was joined to the body like the shoulder-blade of a cow, forming part of the side: That a part of the tail was awanting, being incidentally broken off at the extremity; where the last joint of it was bare, was an inch and a half in breadth: That the bones were of a gristly nature, like those of a halibut,[1] the back-bone excepted, which was the only solid one in the body: That the tail was quite flexible, turning in every direction, as he lifted it; and he supposes the neck to have been equally so from its appearance at the time: That there were either five or six toes on each paw, about nine inches long, and of a soft substance: That the toes were separate from each other, and not webbed, so far as he was able to observe; and that the paw was about half a foot each way, in length and in breadth.

The other reports added little useful information, but they are important. According to Fotheringhame, the carpenter, 'the skin seemed to be elastic when compressed, and of a greyish colour, without any scales: it was rough to the feeling, on drawing the hand over it, towards the head; but was smooth as velvet when the hand was drawn towards the tail'. He also stated that 'a part of the bones of the lower jaw, resembling those of a dog, were remaining at that time, with some appearance of teeth, which were soft, and could be bent by the strength of the hand'.

The beast had clearly been disembowelled, and what seemed to be its stomach hung between its hinder pair of limbs. William Folsetter, a farmer from Whitehall on Stronsa, opened this organ out of curiosity, and he stated,

> ... that it was about four feet long, and as thick as a firkin, but flatter: That the

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[1] An unfortunate comparison because the halibut (*Hippoglossus hippoglossus*) is a teleost and has an entirely bony skeleton.

> membranes that formed the divisions, extended quite across the supposed stomach, and were about three sixteenth of an inch in thickness, and at the same distance from each other, and of the same substance, with the stomach itself: That the section of the stomach, after it was opened, had the appearance of the weaver's reed: That he opened about a fourth part of the supposed stomach which contained nothing but a reddish substance, like blood and water, and emitted a fetid smell . . .

Thus the strange carcase was examined at leisure for several days by responsible witnesses. And a systemic inquiry was soon to be undertaken to collect all their reports and make them official.

The monster had been wrecked on the borders of an estate belonging to an Edinburgh lawyer, Gilbert Meason, who at that time was away from Stronsa, but his brother, the historian Malcolm Laing, M.P., happened to be at Kirkwall on the island. When he heard of it, he was very interested, especially when George Sherar gave him several bits of its skeleton. Bad weather prevented him from going to the sea-shore himself, so he at once sent off Mr Petrie to draw sketches of the animal, but the storm blew up again before he could get there. This time the rotten carcase was smashed to pieces by the waves and scattered on different parts of the coast, so George Sherar did his best to show Petrie what the monster had looked like, by drawing a rough sketch on the table. Whereupon Petrie tried, on his instructions, to produce a more detailed picture. He had to do six or seven different sketches, which Sherar corrected as best as he could, before the farmer was satisfied. Sherar was later to state

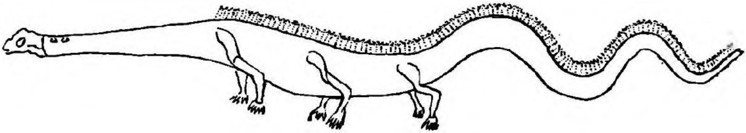
> ... that he was ready to make oath that the drawing is an exact resemblance of the fish, as it appeared when he measured it; and corresponds in all particulars with the idea which he entertains of the figure, dimensions, and proportions of the fish . . .

The picture shows an extraordinary animal with a serpentine body and undulating tail, with a sort of crest all along its back and tail, and with no less than six legs.

This could not fail to startle the zoologists and anatomists. Apart from the larvae of certain millipedes and very small acaridians only the insects have three pairs of legs. It is quite inconceivable that any of the vertebrates, which are so similar in anatomy and share a common origin, should have more than two pairs of legs. This bizarre feature was enough to arouse great interest in the Stronsa beast. Malcolm Laing hastened to send an outline of its description to his brother Gilbert, who passed them on to Patrick Neill, secretary of the Wernerian Natural History Society in Edinburgh. And Neill duly read a communication about 'a great Sea-Snake, lately cast in Orkney' to the astonished members at their meeting of 19 November 1808. Laing promised to send fragments of the animal to the Museum at Edinburgh and was asked to take down affidavits of the eye-witnesses. But even without them the matter was crystal clear to the secretary, for the proceedings add:

> Mr Neill concluded with remarking, that no doubt could be entertained that this was the kind of animal described by Ramus, Egede and Pontoppidan, but which scientific and systematic naturalists had hitherto rejected as spurious and ideal.

This was a very hasty conclusion, but perhaps understandable, since there had been rumours for some months from the Hebrides that several fishermen and a respectable clergyman called Maclean had seen a huge animal near the coast which agreed in every detail with the Norwegian sea-serpent. Naturally many people assumed that it was this beast that had ended its days in the Orkneys. Neill began writing letters in all directions to obtain detailed accounts from those who had seen the monster both alive and dead. Not until April did he hear from the Rev. Donald Maclean, but I will quote from his letter here since it helps to explain the *a priori* assumption about the Stronsa beast.



22. The Stronsa beast, after Petrie

> According to my best recollection, I saw it in June 1808, not on the coast of Eigg, but on that of Coll. Rowing along that coast, I observed, at about the distance of half a mile, an object to windward, which gradually excited astonishment.
>
> At first view, it appeared like a small rock. Knowing there was no rock in that situation, I fixed my eyes on it close. Then I saw it elevated considerably above the level of the sea, and after a slow movement, distinctly perceived one of its eyes.
>
> Alarmed at the unusual appearance and magnitude of the animal, I steered so as to be at no great distance from the shore. When nearly in a line betwixt it and the shore, the monster directing its head (which still continued above water) towards us, plunged violently under water. Certain that he was in chace of us, we plied hard to get ashore. Just as we leaped out on a rock, taking a station as high as we conveniently could, we saw it coming rapidly under water towards the stern of our boat. When within a few yards of the boat, finding the water shallow, it raised its monstrous head above water, and by a winding course got, with apparent difficulty, clear of the creek where our boat lay, and where the monster seemed in danger of being imbayed. It continued to move off, with its head above water, and with the wind, for about half a mile, before we lost sight of it.
>
> Its head was rather broad, of a form somewhat oval. Its neck somewhat smaller.

> Its shoulders, if I can so term them, considerably broader, and thence it tapered towards the tail, which last it kept pretty low in the water, so that a view of it could not be taken so distinctly as I wished. It had no fin that I could perceive, and seemed to me to move progressively by undulation up and down. Its length I believed to be from 70 to 80 feet.
>
> When nearest to me, it did not raise its head wholly above water, so that the neck being under water, I could perceive no shining filaments thereon, if it had any. Its progressive motion under water I took to be rapid, from the shortness of the time it took to come up to the boat. When the head was above water, its motion was not near so quick; and when the head was most elevated it appeared evidently to take a view of distant objects.
>
> About the time I saw it, it was seen about the Isle of Canna. The crews of thirteen fishing boats, I am told, were so much terrified at its appearance, that they in a body fled from it to the nearest creek ... On the passage from Rum to Canna, the crew of one boat saw it coming towards them, with the wind, and its head high above water ... the monster offered them no molestation.—From those who saw it, I could get no interesting particulars additional to those above mentioned.

Meanwhile on 10 and 19 November 1808 Malcolm Laing, who was also a Justice of the Peace in Orkney, had called the four principal witnesses of the Stronsa beast before himself and Dr Robert Groat, another Justice of the Peace, and taken down their evidence upon oath. On the whole their evidence agrees. There is admittedly some doubt about when the carcase was first found, but this is natural enough for farmers living on a lonely island. I spend much of the year on a fairly wild island where I rarely see a newspaper, and I often find it hard to remember the date within a week or so.

It is not odd that Fotheringhame should have said that the throat 'was too narrow to admit his hand' whereas Sherar claimed 'That the aperture of the throat appeared to be so wide that he might have put his foot down through it'. The degree of putrefaction was constantly changing, and in any case the two witnesses may have been looking at different holes. The only important discrepancy is that Sherar says the neck was 'exactly fifteen feet' while Fotheringhame makes it 'ten feet three inches', but as he adds 'as nearly as he recollects', no doubt the first figure is the correct one.

Petrie's drawing was shown to each witness and all agreed that it was fairly accurate except in certain details, particularly the shape and position of the so-called 'limbs'.

Meanwhile in Edinburgh the members were burning with impatience to see the fragments promised by Laing. Continual bad weather had prevented them from arriving, but Dr John Barclay, who had examined them in the Orkneys, came to the meeting on 14 January 1809 and gave an account of the structure, which he thought exceptional, of the vertebrae of the supposed sea-serpent.

This paper, entitled ***Remarks on some parts of the animal that was cast ashore on the island of Stronsa, Sept. 1808*** was published in 1811 illustrated with remarkable drawings, not only of the vertebrae but also of the dried and shrivelled skull as well as one of the 'wings' attached to the sternum (Plates 12 and 13). Before we go any further I should say that any zoologist could see at once that these were remains of a fish with a cartilaginous skeleton like a shark. Of all the vertebrates none but fishes have skeletons that are not fully ossified, and of the fishes only the Chondrichthyes (sharks, rays and chimeras or ratfishes) have entirely cartilaginous skeletons like the Stronsa beast; and of the Chondrichthyes only the sharks have asterospondylic vertebrae, that is to say ones in which the calcification radiates from the centre in a star-shape. They look like cotton-reels or diabolos with fibrous sides.

Dr Barclay's pictures are very telling. The sternum and fin show that Petrie's drawing of the front legs is entirely fanciful. They have no joints but are mere fins made of threads of cartilage—the 'toes'—directly attached to the body. One trusts that Barclay's drawings were not exhibited at the meeting, otherwise it is hard to see how Neill could have solemnly given the Stronsa beast a scientific name:

> The name proposed for this new genus was *Halsydrus*, (from ἅλς the sea, and ὕδρος a water snake); and as it evidently appeared to be the Soe-Ormen described above half a century ago, by Pontoppidan, in his Natural History of Norway, it was suggested that its specific name should be *H. Pontoppidani*.

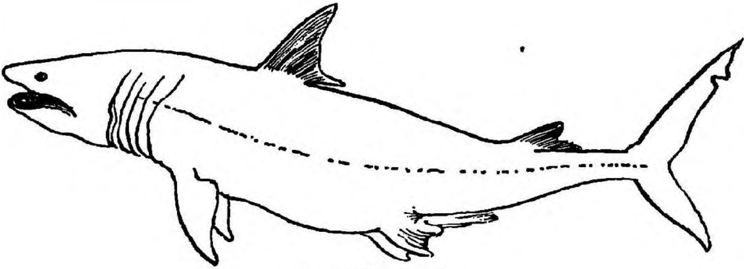
At the next meeting on 11 February Neill read the affidavits from Stronsa. What more could one wish for? The mystery of the sea-serpent seemed to be solved. The beast had been described and named. Nobody bothered about the bones being cartilaginous, which was most odd for a snake—even one with six legs.

Malcolm Laing also sent a copy of the affidavits to that distinguished naturalist and patron Sir Joseph Banks, who passed them on to Everard Home, a famous London surgeon who was also a naturalist and who was at that very moment working on an anatomical study of the Basking Shark. He had had the opportunity to study one of these huge harmless sharks when a specimen 30 feet 6 inches long was entangled in herring nets belonging to fishermen from Hastings. When he read the affidavits Home seems to have been struck by several significant facts; for instance the skin was soft if stroked towards the tail but rough the other way. This is very characteristic of the skin of sharks and other selachians, which is covered with ever small denticles pointing backwards.

Home wondered if the Stronsa beast was simply a huge basking shark. He asked Malcolm Laing to lend him some of the specimens he had kept from the animal, and as soon as Home compared them with the corresponding parts of the Hastings basking shark 'they were found to agree, not only in their form but also in their dimensions'. The Stronsa beast must therefore be a fish of the genus *Squalus*—very different from the picture that people had built up from the rotting carcase they had seen upon the shore.

> In the different depositions, several parts are accurately described, such as the valvular intestine, which was taken for the stomach, and the bristles of the mane, which are described as ligamentous fibres, one of them is in my possession, and is of the same kind with the fibres forming the margin of the fins of the Squalus maximus.[1]
>
> ... The drawing is correct in the representation of the head, and anterior part of the fish, from which the skin, the upper and lower jaw, the gills, and gullet, had been separated by putrifaction ... The legs are tolerably exact representations of the holders in the male Squalus maximus ... and therefore are not imaginary, only that four have been added which did not exist.

It would be truer to say that in his drawing, done from memories six weeks old, Petrie had made the pectoral and pelvic fins the wrong shape, and it is clear enough that what were taken for six legs were two pairs of fins and the double reproductive organ, or claspers, found in all male selachians, that is, sharks, skates and rays.



23. Basking Shark

Home realized that the mane was the fibres that form the termination of the fins and tail, but that this 'could only be met with in the place of the two dorsal fins, instead of being continuous along the back, as in the drawing'. The contortions towards the tail were impossible for the vertebral joints to make and must be imaginary.

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[1] This Latin name was given to the Basking Shark by Gunner, Bishop of Trondhjem in 1765, but in 1816 Ducrotay de Blainville gave it a new generic name, *Cetorhinus*, and it is now known as *Cetorhinus maximus* (Gunner), though some purists prefer *Halsydrus maximus* on the grounds that *Halsydrus*, given to the Stronsa beast in 1809, is earlier!

These criticisms are fair enough, but Home goes on to cast doubt on the measurements, even though they all agree.

> It is said, two[1] different persons measured the fish; one by fathoms, the other by a foot-rule, and that it was fifty-five feet long. Their accuracy is at least doubtful, as the parts that are preserved correspond with those of a fish about thirty feet long.

He concludes that the evidence proves that it is a *Squalus*, 'and the orifices behind the eye, which communicate with the mouth met with in the skull, render it very probable that it is a Squalus maximus'.

One of the characteristics of the basking shark is that it has two minute vents on each side of the head, one behind the eye and one just below the corner of the mouth.

There are other points of identification which have not hitherto been noted. For instance Fotheringhame saw what he thought were 'teeth, which were soft' on what he took to be a jaw-bone. I need hardly say that 'soft teeth' is a contradiction in terms. They were not teeth, nor was it a jaw-bone. The gill-arches of the basking shark carry large numbers of bony but flexible gill-rakers. They form a sort of grill behind the gill-slits rather like the whalebone in whales, and have given the shark the name 'Bone-shark'—i.e. 'Whalebone-shark' (see Plate 17).

Like all the whalebone whales, basking sharks live almost entirely on plankton. They swim lazily along with their mouths open, and as the water passes out through their gill-slits the plankton is caught on the grill. 'Their stomach contents', Georges Petit of the Paris Museum has pointed out, 'always looks like red soup, resembling tomato purée.' This explains why Folsetter found that it contained nothing 'but a reddish substance, like blood and water'.

Home's identification is almost certainly right, but he has not used all the evidence that he might have done—and which would have rendered his position almost impregnable; at the same time he has weakened it by groundless attacks on the accuracy of the measurements.

There seem to be no records of basking sharks being caught since the end of the eighteenth century that were much more than 40 feet long. The largest were 40 feet 3 inches in the Bay of Fundy in the north of Nova Scotia in 1851; about 40 feet at Povoa de Varzim in Portugal in 1865; and 38 feet at Concarneau in Brittany in 1913. These records had not been established in Home's day, but at that time several specimens had been recorded well over 30 feet. It is true that Bishop Gunner had claimed in 1765 that according to trustworthy informants specimens more than 70 feet long—and even more than 100 feet long!—were sometimes caught on the Norwegian coast. But Home seems not to have taken the basking shark's episcopal godfather very seriously, and with good reason, for while one can accept that there may be individual giants two-thirds longer than normal, it is hard to see how they could be two or three times as long.

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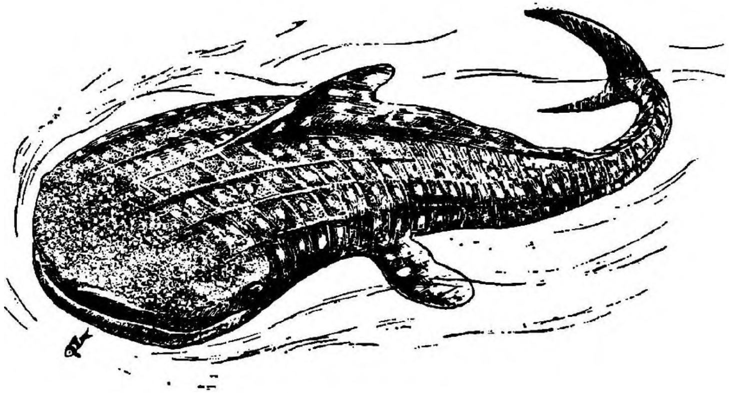
[1] Actually there were three.

In the basking shark, specimens of which range between 6 and 40 feet, the normal size of an adult male seems to be around 25 to 29 feet. This would explain how there could be very large specimens of this species 36 to 40 feet long, and that theoretically there could be monsters 43 to 53 feet long. Might not the Stronsa beast be one of them?

But Home would not admit this.

> It is of importance to science, [he asserted] that it should be ascertained, that this fish is not a new animal unlike any of the ordinary productions of nature.

Yet if the Stronsa beast had been a *real* sea-serpent, need it be 'such stuff as dreams are made on'? And might it not be a selachian of an unknown species or even of an unknown genus? It is most important to realize that *exact identification of a shark is impossible unless one has the teeth and the spicules from the skin.* Moreover the future was to disprove Home's reactionary assertion in a very striking fashion. In 1828 a much larger shark than the basking shark was discovered: the Whale-shark (*Rhineodon*). In 1934 a specimen 53 feet long was measured at Kommetje Bay in South Africa, and there are even some 60 to 65 feet long, like the one which was caught in a bamboo fish-trap at Koh Chik in the east of the Gulf of Siam in 1919 but could not be accurately measured by a qualified person.



24. Whale-shark

The Stronsa beast could hardly be a whale-shark, for it is found only in the warmer waters of the globe. But, however strong the presumption, the *exact* identity of the selachian of Stronsa will always be problematical.

Home's categorical verdict stung Dr John Barclay to the quick, for in the excitement of the first reports he had made some very rash remarks about the spinal structure of the supposed sea-serpent. His rejoinder, published in the *Memoirs of the Wernerian Natural History Society*, unfortunately confirmed his ignorance of comparative anatomy, for he made a number of appalling bloomers, failing to realize how vastly bigger a fish's head is than its skull, and even putting the skull back to front! All the same he was clearly right in insisting that the size of the Stronsa beast did not agree with a 30-foot basking shark, whatever Home might say. And one cannot but applaud his rejoinder:

> Of what importance it is to science to admit no new genera or species into our catalogues of natural history, I cannot conceive. But it is certainly of much importance to science, that the naturalist should be cautious not to determine the species of an animal upon vague evidence.

Unfortunately he adds:

> Now what evidence had Mr Home that this animal was a squalus, and even to suppose that it was a squalus maximus?

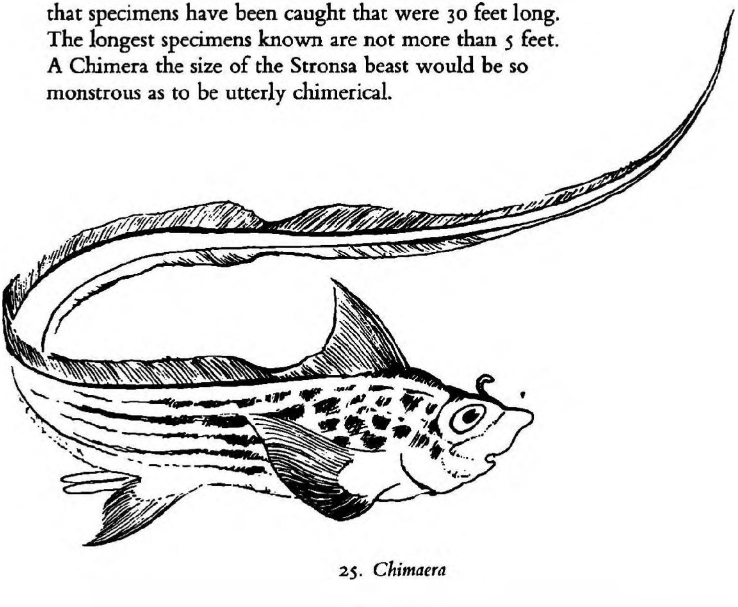
Home had very good reason, and he did not trouble to reply. Although he had much the better of the argument, it became so confused that for long afterwards it was not clear to a casual outsider who had won.

Many Scots and even a few English sympathizers remained faithful to the view put forward by the Wernerian Society. Thus Dr Hibbert wrote with sublime unconcern in *A Description of the Shetland Islands* in 1822:

> The existence of the sea-snake,—a monster fifty-five feet long, is placed beyond a doubt, by the animal that was thrown on shore in Orkney, the vertebrae of which are to be seen in the Edinburgh Museum.

Whenever the affair was resuscitated, Scottish naturalists would throw doubt on Home's verdict, for their pride had been hurt by his condescending and contemptuous manner, and they were still spoiling for a fight. The vigour with which their successors defend the existence of the Loch Ness monster today is merely an echo and a continuation of the old quarrel about the Stronsa beast.

The argument soon spread far beyond the United Kingdom. In 1811 the German natural philosopher Professor Lorenz Oken showed with his usual gusto that the beast was undoubtedly a cartilaginous fish, whose genital claspers had been taken for a third pair of fins, but then went on to argue that it was not a true shark. He concluded that it must be a Chimera—not a mythological imaginary animal, but one of those most bizarre of fish of the great depths, the *Chimaera monstrosa*, which is so rarely captured. His arguments are weak and sometimes even false. *Chimaera monstrosa*, a distant cousin of the sharks, does indeed have a dorsal crest running all the way from the bump behind its head to the end of its long thin tail, just like the weird animal drawn by Petrie, but Oken is wrong to say that specimens have been caught that were 30 feet long. The longest specimens known are not more than 5 feet. A Chimera the size of the Stronsa beast would be so monstrous as to be utterly chimerical.



25. *Chimaera*

Professor Heinrich Rathke of Königsberg argued from the descriptions given by a Dr Hamilton, a partisan Scottish naturalist, that the Stronsa beast was singularly like the plesiosaur, a large marine reptile of the Secondary Era which had been discovered a few years earlier. It must therefore be a saurian. This theory, which is strongly suggested by the usual descriptions of the sea-serpent, will crop up again and again—but here, at least, it is quite beside the point.

These blunders and proliferating theories naturally made people think that the beast was still an enigma. In 1849, Edward Newman, editor of the *Zoologist* in London, was still not convinced that it was a selachian.

> The utter impossibility that a shark fifty-five feet in length having a head only seven inches in diameter, and cervical vertebrae only two inches in diameter, is so manifest that further enquiry seems desirable.

Some remains of the animal must survive, he thought, and could be examined by competent zoologists, so he made a list of questions in the hope that the Scottish naturalists could answer them.

It would have been easy to enlighten Newman by pointing out that it was not the head but the cranium that was 7 inches in diameter, and that it was not a cervical vertebra but the cartilage at the tip of the nose that was two inches in diameter. But, alas, Jason C. Howden, who replied to Newman's questions, preferred to blame the apparent discrepancies in the Stronsa beast's dimensions on the fact that 'no well-educated person saw it: they were all ignorant, illiterate men'. He, too, cannot tell the difference between a skull and a head, and chooses to 'suspect the carpenter's footrule of showing a decided taste for the marvellous'.

This was answered very firmly in 1854 by Dr Thomas Stewart Traill, who took up the matter again and attacked Sir Everard Home (who in the meantime had been knighted and had died). He knew the witnesses:

> They were men of such honour, intelligence, and probity, that I can have no doubt of the correctness of any statement they made of their impressions of what they had so carefully observed.

He adds that basking sharks, often caught in the Shetlands, were probably more familiar to them than to Sir Everard. And he remarks very justly on the incompatibility between the 55-foot monster and basking sharks which do not exceed 36 feet. But he too spoils his argument by repeating Dr Barclay's mistakes, and making some more of his own. These lead him to maintain:

> Every thing proves the Orkney animal to have been a chondropterygious *fish*, different from any described by naturalists; but it has no pretensions to the denomination of *Sea Serpent* or *Sea Snake*, although its general form, and probably its mode of progression in the Ocean, may give it some resemblance to the order of *Serpentes*. Certainly, it cannot be confounded with any known shark; nor does it belong to the family of Squalidae.

After more than a century of contradictory theories, obvious mistakes and too categoric pronouncements, a zoologist as eminent as Professor D'Arcy W. Thompson could still add to them by stating, as he did in 1928, that the Stronsa beast 'was almost certainly a huge oar-fish of the genus *Regalecus*'.

> Sir Everard Home, it is true, [he goes on] identified the two [?] vertebrae which alone were preserved as those of the great Basking Shark, but I have examined

> vertebrae of both fish, and believe that, in a more or less mutilated condition, they might well be mistaken for one another, even by an anatomist.

This makes nonsense of the accounts of rough skin, and the stomach divided into compartments, it overlooks the figures reproduced of the skull, sternum and pectoral fin—which could not possibly belong to an oarfish—though it does show the weakness of any identification based solely on the surviving vertebrae.

Some of these were given, I don't quite know why, to Joanna Baillie, the poetess and playwright, who gave them to Lady Byron in 1815, thinking that they would interest her husband, the poet. Others were shared, for more obvious reasons, between two Edinburgh museums. Three vertebrae, preserved in alcohol, ended up in the Royal Scottish Museum where Professor James Ritchie, ex-curator of its natural history department, decided, some thirty years ago, to re-examine them. He published his conclusions in *The Times* on 16 December 1933. He agreed with Home that they were identical with a basking shark's and that the Stronsa beast must therefore be one of these fish made unrecognizable by putrefaction.

I will not insult Professor Ritchie by suggesting he could be mistaken, for it is very difficult to confuse the cartilaginous vertebrae of the Chondrichthyes with the bony ones of all the other vertebrates. They could not possibly be those of a reptile or mammal.

But the experts could only make their *exact* identification by elimination, since they had no teeth or spicules from the skin. Once the vertebrae showed that the beast was a shark of gigantic size, they supposed that it could only be a whale-shark (sometimes more than 52 feet long) or a basking shark (up to 40 feet long). The first is not found in cold waters, but the second is common around the Orkneys. Therefore, they said, it must be a basking shark.

But I cannot repeat too often that this conclusion does not *necessarily* follow.

The Stronsa beast was not the only washed-up carcase to be taken for a sea-serpent. Charles-Alexandre Lesueur, the French zoologist, reported in 1822 that a huge sea-monster caught in Raritan Bay, New Jersey, was exhibited to the public as the 'Leviathan or Wonderful Sea-Serpent' although it was really a basking shark.[1] This confirms that this fish, far from slender by nature, may be mutilated by accident or design so that it looks like a sea-serpent.

Less than a century after the Stronsa beast another very similar animal made a similar stir in America. J. B. Holder tells how:

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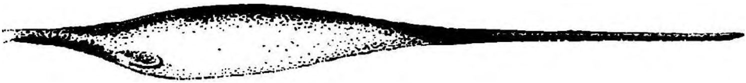
[1] Probably the same monster, 30 feet long and about 18 feet in circumference, which according to the New York papers of 15 June 1822 was shot, harpooned and hauled ashore near Middleton Point. It had six rows of teeth and its liver yielded three barrels of oil.

> In the spring of 1885 the Rev. Mr. Gordon of Milwaukee, President of the United States Humane Society, chanced to visit, in the course of his duties, a remote and obscure portion of the Atlantic shores of Florida.
>
> While lying at anchor in New River Inlet the flukes of the anchor became foul with what proved to be a carcass of considerable length. Mr. Gordon quickly observed that it was a vertebrate, and at first thought it was probably a cetacean. But, on examination, it was seen to have features more suggestive of saurians. Its total length was forty-two feet. Its girth was six feet. The head was absent; two flippers, or fore-limbs, were noticed, and a somewhat slender neck ... six feet in length. The carcass was in a state of decomposition; the abdomen was open, and the intestines protruded.
>
> The striking slenderness of the thorax as compared with the great length of body and tail very naturally suggested to Mr. Gordon, whose reading served him well, the form of some of the great saurians whose bones have so frequently been found in several localities along the Atlantic coast. No cetacean known to science has such a slender body and such a well-marked and slender neck ... appreciating the great importance of securing the entire carcase, Mr. Gordon had it hauled above the high-water mark, and took all possible precautions to preserve the bones until they could be removed ... He counted without the possible treacherous hurricane; the waters of the 'still-vexed Bermoothes', envious of their own, recalled the strange waif.



26. New River Inlet, Florida, carcase, 1885

Several authors have considered the Florida carcase to be the only one likely to be that of a real sea-serpent. In fact there is not much one can say about this beast, which is so very summarily described, except that it is damnably like the Stronsa beast in shape, and could also be a large selachian in a state of decomposition, with the skull, gill-system and all the corresponding flesh missing. It is hardly likely to be a basking shark in the warm waters of Florida, where, however, several whale-sharks have been known to be washed ashore.

Several other 'monsters' all described in a similar fashion, were subsequently washed ashore. In 1934 the rotting carcase of an animal about 30 feet long was cast up on the beach on Henry Island in British Columbia. It was said to have reddish flesh, skin covered with hair mixed with quills, a horse's head and a spinal column upon which one could see what seemed to be where four fins or flippers were attached.

It was hauled up on to the quay at Prince Rupert where a number of people examined and photographed it. Dr Neal Carter, director of the Dominion Experimental Fisheries Station there, said it was clearly a mammal and 'in life it must have been slender and sinewy'. Now a sea-serpent had been seen in British Columbian waters some time before and had been solemnly named a 'cadborosaurus'—'Caddy' for short—by a journalist. As with the Stronsa beast, many people immediately thought that the two animals must be the same, and that a live 'slender and sinewy' animal would make a very fair 'cadborosaurus'.

But when the skull and some parts of the backbone were sent to the Government Biological Station at Nanaimo, Dr Clemens, the director, declared straight away that they belonged to a basking shark.

This did not prevent the keepers of the Provincial Museum of Victoria from saying that they were undoubtedly the remains of the last specimen of Steller's Sea-cow (*Hydrodamalis stelleri*), a huge sirenian, up to 20 to 30 feet long, which was discovered in 1741 by Vitus Bering's expedition to the sea which bears his name. Systematically slaughtered, the poor sea-cow was thought to have disappeared from the face of the earth before the end of the eighteenth century, but this is far from certain, as we shall see later.

The *Illustrated London News* of 15 December 1934 reproduced not only a photograph of the monster which consisted of little but its skull and spinal column, but also pictures of the skeletons of a sea-cow and a cast of that of a basking shark. A single glance was enough to show that the first and second had nothing in common, but the first and third were strikingly similar. The shape of the skull, the position of the eye-socket, the shape of the vertebrae and even their approximate number, the dorsal ligament joining them together, all agreed exactly (see Plates 15, 16, 17).

The hairy horse-headed monster of Henry Island was therefore a decomposed large selachian—most likely a basking shark. Moreover in the very same year another mysterious carcase was to help to explain how washed-up 'sea-serpents' are produced.

On the afternoon of 28 February 1934, a huge and strange-looking carcase was found by fishermen on the beach at Querqueville, west of Cherbourg. Its head, which they thought looked like a camel's, was on the end of a long thin neck. It had two big flippers at the front of an elongated body, a fin on its back and a long tapering tail. Its skin seemed to be covered with a fleece of short stiff whitish hair. It was about 20 feet long, of which 3 feet were neck, and it was 5 feet in diameter at the thickest point. Some 50 yards away there lay a heap of entrails, which according to *La Croix* of Paris consisted of the beast's lungs, peritoneum and kidneys (see Plates 18, 19).

Anyone who had heard of the Stronsa beast would have been very wary of the description and photographs of this new carcase. But the press knew nothing about the affair that had caused such a stir in the scientific world a century earlier, and burst forth in a flood of statements of varying accuracy and suppositions without foundation. Reuter said it was a whale, the United Press that the experts from the Natural History Museum identified it as a sea-cow. Yet the reports made it clear that its cartilaginous skeleton was one of its most conspicuous features. The lesson of Stronsa had yet to be learnt.

And, as in that affair, various quite distinct events were unjustifiably connected with the carcase. The skipper of tug *117* told how on the 25th or 26th of the previous month he had seen a large sea-creature moving very fast some way off the Querqueville breakwaters. Suddenly the animal's head rose out of the water, and it looked to him like a horse's. When it appeared again, some 150 yards further off, its neck was visible and looked like a camel's.

When shown the photograph and asked what the animal was, three English experts—and no mean ones at that—gave quite contradictory views to the *Daily Mail.* Dr Burgess Barnett, Keeper of the Reptile House at the London Zoo, said that it was a small whale, Dr W. T. Calman, Curator of the Zoological Section of the Natural History Museum, that it must be a basking shark, and his colleague Martin A. C. Hinton that it was a huge seal. After the absurd exhibition of expert evidence about the Stronsa beast it almost seems astonishing that one man was right this time!

The Paris Museum was not officially informed until March 1, and Dr Georges Petit was sent to find out exactly what the beast was. He reached the carcase on the morning of March 3.

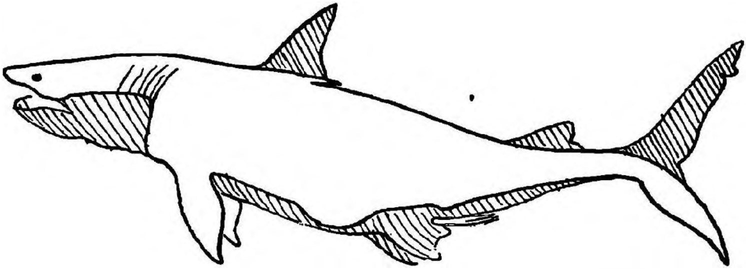
> Washed up by the tide [said Dr Petit], it now appeared as a shapeless mass, greyish in colour, which one might have taken at first for a rock if it had not extended in front in the spinal column, somewhat stripped of flesh, and the bare whitish skull.
>
> I realised at once that it was not a marine mammal, as had been supposed, but a plagiostomous fish of the Selachian order.
>
> With the help of those who had seen the animal soon after it was washed up, I pieced together its general appearance. The first dorsal [fin] still survived, mutilated; I could see where the second dorsal, the ventrals and the much smaller anal had been, though they were entirely missing, and work out the shape of the caudal and separate the pectorals. Some fifty yards from the carcase I was able to examine pieces of the intestines which still had the spiral valvula characteristic of the Selachians and a reddish lobulate gland, which had been variously called an ovary and a pancreas, but which was actually the spleen. And I removed, to bring to the Museum, several 'exhibits' such as the skull and the anterior part of the vertebral column.
>
> After my observations of the carcase, my belief is that the Querqueville 'monster' must be a basking shark (*Cetorhinus maximus* Gunn.). The *exact* identification of a shark is of course impossible without the teeth or the spicules on the

> skin. With this animal we had no data upon which to base exact measurements nor any specimen with which to compare the skull.
>
> Nevertheless the literature on the subject and a number of cross-checks have confirmed what we thought at the beginning.

How pleasant it is to welcome so clear and conscientious a report during this affair out of which scientists have not usually come very well!

Dr Petit also questioned the skipper of tug *117* and concluded that as the carcase was relatively fresh—mutilated rather than decomposed—it could well be this basking shark that the man had seen. He must have seen only the tip of the fish's head—and perhaps influenced by the apparent shape of the carcase—thought that it had a long neck. But as the tug skipper told Dr Petit that he hadn't seen the dorsal fin—which it is hard to miss when a basking shark appears at the surface—I find it hard to believe that the two events really have anything to do with one another.

As a result of Dr Petit's careful account the truth at last emerged. It seems to be quite normal for basking sharks to take on a plesiosaur's shape when they decompose. This is because of the peculiar structure of their gill-slits which are extremely long and go almost right round the neck. A live basking shark is virtually decapitated. As soon as its tissues decompose and become soft, the whole gill apparatus easily falls away taking the jaws with it, so that nothing remains in front of the pectoral fins but the tiny skull and the spinal column clad in its muscles and thus looking like a thin neck. At the other end of the body, the lower fluke of the tail soon goes with nothing to support it, since the spine extends only into the upper one. The body then seems to have a long thin tail.



27. How a basking shark may acquire a plesiosaur's shape when parts of its body (*shaded*) rot away, after Dr G. Petit. Usually, however, it is the lower lobe of the tail that drops off first

The final monstrosity of these pseudo-plesiosaurs is that they seem to be hairy. In the selachians the fibres of the surface muscles break up into whiskers when the skin rots or is eaten away. These fish then seem to have coarse stiff fur, varying from dirty white to reddish in colour, as the body decomposes or dries out on the shore. If parts of the dorsal fin remain these hairs can even look like a mane. Thus there is no need to be as bold or simple as a mediaeval artist to produce a creature with a fish's skeleton, the general shape of a reptile and with mammal's hair.

The familiar story was repeated at Prah Sands in Cornwall in 1933 and Deepdale Holm in the Orkneys in 1941. Yet when in August 1953, fishermen at Girvan in Ayrshire found the carcase of a sea-monster about 30 feet long with a giraffe's neck, a camel's head, a tail 12 feet long and entirely covered with bristles, experts in London declared that it was a 'large whale' and journalists that the Loch Ness monster had risen again, on the grounds that a similar animal had recently been seen in the mouth of the Clyde. How the monster could have got out of the loch they did not explain.

The Stronsa affair and its sequels have other lessons for the naturalist besides caution about carcases. The fact that some fish may seem to become furry as they decompose may answer some ancient riddles. For instance Pliny said that there were hairs on his *pristis* (thought to be the Sawfish). No doubt his description of this selachian was based on a decomposed carcase. That he should have said that in the Indian Ocean the *pristis* might reach a length of more than 200 cubits (about 300 feet) although no specimens of sawfish are known to exceed 23 feet is perhaps just another example of the usual exaggeration of ancient writers when their information came from the East.

Olaus Magnus wrote in his *Historia de gentibus septentrionalibus* (1555):

> There are many kinds of Whales, some are hairy, and of four Acres in bigness: The Acre is 240 foot long and 120 broad: some are smooth-skinned, and those are smaller, and are taken in the West and Northern Sea.

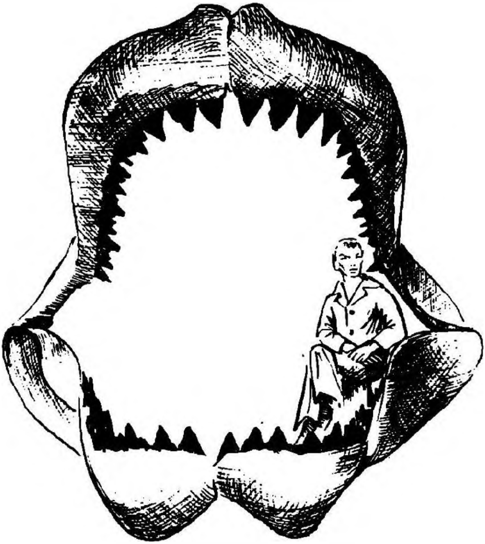
His readers were naturally sceptical about monsters of such size. But he could merely have taken it from Pliny who talks of 'whales of four acres' and 'sawfish 200 cubits long' and says 'those which are hairy are viviparous, like the sawfish, the whale and the sea-calf'.

All the same Admiral Étienne de Flacourt has a similar story in his *Histoire de la Grande Isle de Madagascar* in 1658:

> The inhabitants also say that there is a monstrous sea-fish which they call *Fanghane*, as we would say Dragon, which is bigger by far than a whale; that thirty or forty years ago in Ranoufoutchy cove one was washed up that was three times as big

as a whale, and that it was all hairy and so rank by reason of its corruption that no one could go near it.

There is no doubt that the size of these beasts was exaggerated, but it is disturbing to find this tale of hairy sea-monsters bigger than whales coming so confidently from places so far apart. Of course they might sometimes be based on the carcase of a sea-serpent with real hair—that is to say a large unknown mammal—being washed up. But such monsters can be explained without this theory, for we have physical proof that there were once—even if they are no more—similar creatures in the sea.



28. Reconstruction of the jaws of *Carcharodon megalodon*

The zoology manuals say that the whales are the largest animals that have ever lived on earth. This is far from certain. We do not know exactly what was the maximum size of sharks of the species *Carcharodon megalodon*, gigantic brothers of our present White Shark (*C. rondeleti*), which are often 40 feet long, and may exceed 65 feet.[1] From the terrifying size of their teeth, which have been found in deposits from the beginning of the Neozoic Era, and from reconstructions of their terrible jaws, some specialists have calculated that *Carcharodon megalodon* must have been between 80 and 120 feet long. This figure is based on the relative size of the teeth of various related species, but in fact for mechanical reasons giant species are almost always proportionately longer than the normal, so the larger figure is most likely to be right. It may well even be too small.

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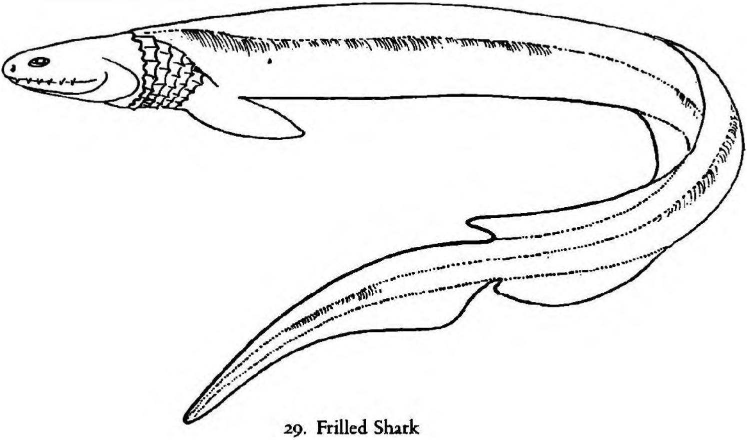
[1] When the famous oceanographic vessel *Challenger* was dragging the bed of the Pacific towards the end of the last century, she brought up White Shark's teeth, 5 inches long, which if they were in proportion must have come from specimens over 65 feet long.

The story of the coelacanth shows that there is no *a priori* reason why such enormous monsters should not survive. After all, we should not have known that there still are savage and voracious 60-foot sharks if their teeth had not been discovered by chance. The past existence of even larger carcharodons shows that sharks may be bigger than the biggest whales, in which case may not the legend of hairy sea-monsters be based, as it was in Flacourt's story, on decomposed carcases, and may they not be the carcases of giant selachians?



29. Frilled Shark

The size of the Stronsa selachian, whose species was never exactly identified, was *very very* much greater than that of any known basking shark. And one cannot help wondering whether—at least in the more doubtful cases—the carcases were not those of giant sharks, probably closely related to the basking shark, but bigger and more elongated in shape.

There is indeed a selachian, so serpentine in shape that at first sight it looks like a big eel, the Frilled Shark (*Chlamydoselachus anguineus*). This very archaic selachian was discovered in deep water off Japan and first described by

Samuel Garman in 1884. Since then a few rare specimens have been fished up not only off Japan but also near the west coast of Europe. And the area of distribution of this shyest of species must be more widespread still, since Pete Metson, a fisherman from Santa Barbara, caught one near the surface off California in 1948. Its name *Chlamydoselachus* refers to the frill of collars like a ruff which conceals its six gill-slits, and *anguineus* to its eel-like shape. Like the other archaic sharks *Chlamydoselachus* has only one dorsal fin, but unlike most of them its mouth is almost at the front of its head and not underneath. The terminal position of the mouth, the long flexible body, the triangular dorsal fin very far back on the body and the gill-fringes which might be taken for a floating mane, are all reminiscent of some accounts of the sea-serpent. But, alas, the biggest specimens of frilled shark are no more than 6 feet long. This did not prevent Samuel Garman from writing 'in regard to the "Sea-Serpent" of Literature' in the same year that he had described the frilled shark:

> I have no idea that we shall ever find a huge unknown lung-breathing Saurian as a foundation for the stories. The existence of types of extinct Sauria of various geological periods is possible but improbable. The geological record is very incomplete ... Within a few years our imperfect apparatus has secured from great depths a host of strange creatures, but none of the largest or strongest. In fact we have had scarcely more than mere suggestions of what may exist, and, in view of them, should not be surprised at anything that may come up. If there is a 'sea-serpent' yet unknown to scientists, it is likely to prove a deep-sea fish or a Selachian.

The great zoologist Theodore Gill, who was one of the first to study *Chlamydoselachus*, was much more definite. He did not believe the sea-serpent was a serpent, but suggested it might be a gigantic member of the family of Chlamydoselachidae. This family, which goes back to the Archaeozoic Era, was once very diversified and could have produced giant forms like the other families of selachians.

I would not dream of trying to explain all the reports of sea-serpents by a giant species of frilled shark. Too many witnesses describe it with its head often out of the water or even at right-angles to its neck like the handle of an old umbrella—an impossible position for any fish. All the same this theory would account for some appearances of a creature which could be called a sea-serpent. If it were a fish—and thus absolved from the need to come to the surface to breathe—and especially if it were a fish whose normal biotope was 100 fathoms deep or more, this would explain why it was rarely harpooned, washed up or observed for any length of time.

Large serpentine selachians have certainly sometimes been caught. *The Sea-Side Press*, an American journal, for August 1880 wrote:

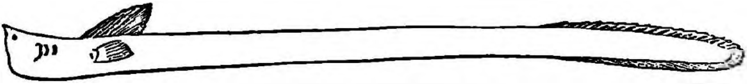
> S. W. Hanna, of Pemaquid, caught what might be called a young sea-serpent in his nets the other day. It was about 25 feet long and 10 inches in diameter in the largest part, and was shaped like an eel. The head was flat, and the upper part projected out over the mouth, which was small and contained sharp teeth. It was dead when found.

J. M. Allen, a naturalist of Hartford, Connecticut, wrote to Captain Hanna, who confirmed the accuracy of the story and added a few details:

> The skin was not like a scale-fish, but more like a dog-fish or shark, though a great deal finer in quality. I did not save the fish for the reason that I did not know what I had caught. In fact, I considered it a streak of ill-luck rather than good fortune, having torn my nets very badly and otherwise bothering me in my business.

One of the greatest American naturalists, Spencer F. Baird, director of the U.S. Fish Commission, came to hear of it and asked some more questions of the captain, who was persuaded to draw a sketch and provide further details:

> The body was round or very near that form ... the color of its back was of a slate or fish color; belly, grayish-white ... The head did resemble that of the shark, only more stunted, *i.e.*, it did not lengthen out like the shark's ... The mouth was very small, not any larger than the mouth of a good-sized dog-fish, with fine, briery teeth, located and at the extreme end of the head or nose.



30. Captain Hanna's fish, 1880

But Captain Hanna added later that the nose stuck out a little beyond the mouth, though less than an inch.

With its gill-slits—a sure indication that it was an elasmobranch—its triangular dorsal fin and profile reminiscent of a basking shark's, it seems to have clearly been a selachian.

Yet Captain Hanna said that the fins were not 'stiff-pointed fins like the shark or sword-fish, but more like the side-fins of the cod or sun-fish'.

But could the caudal fin that fringed the whole of the tail like an eel's have really been a selachian's?

When the frilled shark was discovered four years later, there was no longer any doubt that there were serpentine sharks, with eel-like caudal fins and mouths at the front of the head. Might not Captain Hanna's fish have been some kind of big *Chlamydoselachus*? Perhaps the captain had been mistaken about the position of the dorsal fin, which is much further back on the frilled shark? Perhaps it was an even odder kind of selachian? At all events it showed that there were serpentine selachians much larger than little *Chlamydoselachus*.

In a copy of the *Shipping Gazette* for 1886 I have found an interesting item that seems to have been missed by the learned world, at all events it had no sequel:

> A sea-serpent is reported to have been captured at Carabelle, Florida, by a fishing steamer named the *Crescent City*, which it towed wildly for some time before it was killed. The thing measures 49 feet long and 6 feet in circumference. It is eel shaped, with a shark-like head and a tail armed with formidable fins. It was caught with a shark-hook, but after being tired out it had to be shot.

Oddly enough the theory of a big eel-like selachian, though it is one of the most plausible, has never even been mentioned by Gosse, Oudemans, Gould, Ley or Carrington when they wrote about the sea-serpent. Did they find it too dull and prosaic? And if we need a good name for it, what could be better than Lewis Carroll's 'Snark', a portmanteau-word which he coined in 1876, eight years before *Chlamydoselachus* was discovered, and which so aptly describes a shark the shape of a snake?

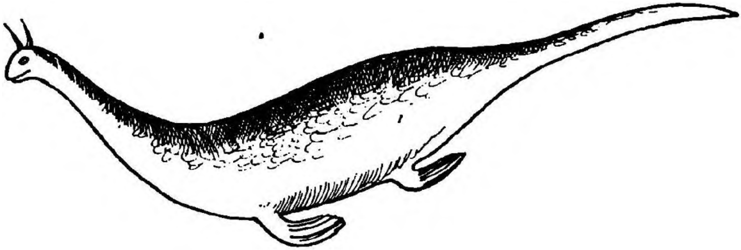
It would be pleasant to have done once and for all with the carcases so often attributed to the sea-serpent, and which clutter up the monster's history. Whenever a huge hairy long-necked beast with a horse's or a camel's head is cast up, it is a pretty safe bet that it is the rotting carcase of a big selachian, probably a basking shark, whose anatomy lends itself so well to losing almost all its head. But pretty safe bets are not certainties, and one should never scorn a present from Neptune. Zoologists have heard 'Wolf!' cried so often about would-be washed-up sea-serpents, that it is understandable enough if they automatically assume that they are basking sharks. But one should always make some preliminary checks by asking those on the spot to send a bit of the carcase, a photograph or even a sketch.

In the autumn of 1959 the remains of a huge serpentine animal were found in an old fish-trap on the north coast of New South Wales. It was dragged up on the beach and put in a hangar. Fortunately Mr A. H. R. Myrtleford who had gone fishing there saw the skeleton completely stripped of flesh and wrote to the *Australasian Post*:

> Nobody seemed to know much about the object and in fact nobody was interested. But from sketches and illustrations I have seen of sea-serpents, I believe this might be one.

Mr Myrtleford offered £10 for the 18 feet 6 inches of carcase, but without success—which was lucky for him, as he wouldn't have had a very good bargain. In the photograph he took (Plate 20) one can clearly see that the vertebrae are asterospondylic in structure. They are certainly a shark's. Without the dermic spicules, one could not say what species it belonged to. But its size was nothing out of the ordinary, so there was no need to call in an expert.

Sometimes time rather than distance is the trouble. In 1962 M. Léon Ducourau, who had watched my series on television, told me that a decade earlier in February 1951 a sea-monster 16 feet long had been washed up on the beach at Hendaye. It looked 'just like a prehistoric animal', he wrote: a tortoise's head with two cartilaginous antennae, a long plesiosaur's neck, a brown body with large oval scales in places, and four short webbed feet like a seal's or a turtle's. A little sketch, drawn from memory many years later, completed his very baffling description of the animal. By an extraordinary stroke of luck, I eventually discovered that photographs had been taken. They were not perfectly sharp, having been taken with a cheap camera, but all the same one could clearly see the head, almost entirely stripped of flesh, with its pointed beak and extraordinary little antennae (Plate 21). These antennae were most disconcerting and had me puzzled for some time, but in the end I realized what they were and thus solved the problem.



31. The Hendaye carcase, after Léon Ducourau, 1951

In the basking shark's head (see Plate 17), which has a 'nose' that varies with age and is shaped a little like a pointed shoe, the skull is extended forward in a sort of narrow snout which is held, tilted up, by two rods, the rostral cartilages, which make the whole structure into a sort of tripod. Once the flesh fell away, the cartilages would come free from the end of the snout, which would drop and leave the two rods sticking up like antennae.

Another stranding at St-Jean-des-Monts (Vendée) in 1961 led once again to the same conclusion after only slightly less painstaking inquiries.

This long series of disappointments might lead zoologists to feel that there was no point in taking any notice of washed-up sea-serpents, for they would be sure to be merely decomposed basking sharks. But this would be very wrong.

I have purposely grouped together in this chapter all the stranded monsters that have proved to be basking sharks. There have been others, of somewhat different appearance, which we shall come to in due course. Moreover the sea-serpent, though the biggest, is not the only mystery in the sea. The fact that I have taken the trouble to 'go and see' has enabled me to make several discoveries: in 1951 a False Killer-whale (*Pseudorca crassidens*) on the Île du Levant, one of the Hyères, although it was then quite unknown off the French Mediterranean coast; in 1961 a Cuvier's Whale, which is extremely rare in our zoological collections, the skeleton of which I was able to preserve for the Natural History Museum at Marseilles; and finally, in 1963. the oarfish reproduced as Plate 10.

Perhaps after I have identified a dozen basking sharks I shall jib at yet another hairy plesiosaur with snails' horns cast up on the beach. But what if one day a real sea-serpent, a big undiscovered animal, breathes its last on some beach and nobody but 'ignorant fishermen' stares at it, none but seabirds dissect its flesh and only the waves take charge of its mighty bones?

6

Science Accepts but Ignorance Rejects

(American Period, 1817-1847)

Nor has the animal been seen before or since, except by the Americans, who have much better eyes than the people of Europe boast of.

HUCKABUCK IN FREDERICK MARRYAT'S *The Pacha of Many Tales*

And so great in some minds is the fear of popular ridicule regarding this subject, that one ship-captain related that when a sea-serpent had been seen by his crew from the deck of the vessel, he remained below; since, to use his own words: 'had I said I had seen the sea-serpent, I should have been considered to be a warranted liar all my life after.'

DR ANDREW WILSON, *Leisure Time Studies*

The first American reference to the sea-serpent that I can find is in the works of John Josselyn, the naturalist author of *An Account of Two Voyages to New England* (1674).

> They told me [in 1639] of a *sea-serpent* or snake, that lay coiled upon a rock at Cape Ann; a boat passing by with Englishmen on board, and two Indians, they would have shot the serpent, but the Indians warned them, saying that if he were not killed outright, they would all be in danger of their lives.

This, of course, implies that Josselyn was not the first person in America to believe in the sea-serpent. That honour belongs to the Indians. There is a gigantic water-serpent in the legends of many Indian tribes. The Creek Indians, Algonquins, Iroquois, Onondagas and Ojibways believe in a huge freshwater serpent. But the Hurons say that their *angoub* also lives in the sea, and the Chinook Indians of British Columbia say the same about the *hiachuckaluck.* Unfortunately the water-monsters of American Indian legend are often so fantastic that perhaps we had better stick to the evidence of colonists and their descendants. There will be no lack of it, especially from the middle of the eighteenth century onwards, so that a picture of the local sea-monster emerges quite clearly. At that time quantities of reports suddenly begin to pour in from the Atlantic coast of what was to become the United States and Canada. It would seem that sea-serpents found conditions particularly favourable off the coasts between Cape Hatteras and Newfoundland, for I have found some 130 reports of them in these waters before the present century. Nine-tenths of them come within the hundred years from 1777 to 1877—the first century of American independence. This will give some idea of their frequency. Most of them come from New England, especially Maine and Massachusetts, where the beasts then seemed especially to thrive.

We need not waste much time on the dozen reports during the second half of the eighteenth century.[1] The dates are usually vague, in four cases there are no details at all about the animal seen, and in three the place is not exactly specified. All the same we can say that two-thirds were off Maine, mostly in Penobscot Bay, and several others in Broad Bay between Penobscot and Portland. Here, as an example, is the most circumstantial of these accounts, from Captain George Little of the frigate *Boston*:

> In May, 1780, I was lying in Round Pond, in Broad Bay, in a public armed ship. At sunrise, I discovered a large Serpent, or monster, coming down the Bay, on the surface of the water. The cutter was manned and armed. I went myself in the boat, and proceeded after the Serpent. When within a hundred feet, the mariners were ordered to fire on him, but before they could make ready, the Serpent dove. He was not less than from 45 to 50 feet in length; the largest diameter of his body, I should judge, 15 inches; his head nearly the size of that of a man, which he carried four or five feet above the water. He wore every appearance of a common black snake.

From the striking similarity between descriptions from this period, it is clear that animals which from a distance looked like a gigantic Common Black Snake (*Coluber constrictor*) lived in the coastal waters of Maine. I say 'animals' in the plural, since the notion that *the* sea-serpent is a single individual, though appealing to journalists and poets, is palpably absurd and has perhaps helped to discredit it in the eyes of naturalists.

Evidence that the sea-serpent is not a single individual, if it is really needed, is provided by a certain Mr Crocket who saw two together around 1787: a large and a small, in Penobscot Bay near Fox Island and Long Island; and a dozen years later two young Fox Islanders saw a pair swimming together. Admittedly, such reports are extremely rare, and altogether I have found no more than a dozen.

As sea-serpents must grow with age, and must surely reproduce sexually like other vertebrates, they must exist in various sizes. Of the dozen or so American reports from the second half of the eighteenth century only two-thirds give details of the beast's apparent size. The length of 300 feet given for the one seen by the British on their expedition to Bagaduse must surely be very exaggerated; most of the other witnesses agree on a length between

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[1] Besides those mentioned in the text there are the sea-serpents seen by Joseph Kent of H.M.S. *Intrepid* in May 1751, by Captain Paul Reed some thirty years before 1803, by Stephen Tuckey around 1779, and off Meduncook around 1780.

40 and 60 feet. It is perhaps worth remarking that the people of Maine are generally considered by the rest of the United States to be taciturn and distinctly given to understatement. Old Captain Eleazar Crabtree was a single exception: he said that the animal was 55 to 60 feet long when he saw it in 1793, but had enlarged it to 100 feet when he was questioned about it several decades later. Given enough time even New Englanders may sometimes begin to talk like Texans. Even so, as we shall see, a person of note was to give an even greater length, 100 to 150 feet.

Several observers at this time remarked that the beast, which seemed to them to be a serpent, held its head 4 to 5 feet out of the water; some even talk of a height of 6 to 10 feet. And those who have estimated the maximum diameter of the visible part of the animal give sizes from 15 to 22 inches; the diameter of a 'barrel' is a comparison often used.

Finally Mr Crocket, who saw two of these puzzling animals together, says that 'their motion in the sea appeared to be perpendicular and winding, and not horizontal', by which he clearly means that they seemed to undulate up and down, like the Scandinavian *Sœ-Orm*. This was also confirmed by two young men of Fox Island, who said that the serpent they saw 'appeared to have an ascending and descending motion'. To move in such a way is so unusual, so very out of the ordinary, that it would seem odd if it were a feature of two different marine animals. Therefore Pontoppidan's sea-serpent and its American rival were thought to be closely related. But this may well prove to be a mistake.

Among the reports from this period there is one, which though it looks exaggerated, deserves particular attention since it comes from one of the great names in American naval history, Commodore Edward Preble. One can hardly doubt its authenticity.

In 1779, in the middle of the War of Independence, Preble, then aged eighteen, was serving as an ensign on the *Protector*, twenty-six guns, Commander John Foster Williams. In June, after an action against the British ship *Admiral Duff*, which blew up by accident, Williams was ordered to join the expedition against the enemy base on the Penobscot.

> It was while thus employed [writes J. Fenimore Cooper in his biography of Preble], that an incident occurred to Preble, that is worthy of being recorded, more especially since subsequent events have confirmed its truth. Preble related the affair substantially as follows: The *Protector* was lying in one of the bays on the eastern coast, which has been forgotten, waiting the slow movements of the squadron. The day was clear and calm, when a large serpent was discovered outside the ship. The animal was lying on the water quite motionless. After inspecting it with the glasses for some time, Capt. Williams ordered Preble to man and arm a large boat, and endeavor to destroy the creature; or at least to go as near to it as he could ... The boat thus employed pulled twelve oars, and carried a swivel in

> its bows, besides having its crew armed as boarders. Preble shoved off, and pulled directly towards the monster. As the boat neared it, the serpent raised its head about ten feet above the surface of the water, looking about it. It then began to move slowly away from the boat. Preble pushed on, his men pulling with all their force, and the animal being at no great distance, the swivel was discharged loaded with bullets. The discharge produced no other effect than to quicken the speed of the monster, which soon ran the boat out of sight.
>
> There is no question that in after-life, Preble occasionally mentioned this circumstance, to a few of his intimates. He was not loquacious, and probably saw that he was relating a fact that most persons would be disposed to doubt, and self-respect prevented his making frequent allusions to it. When it is remembered that Preble died long before the accounts of the appearance of a similar serpent, that have been promulgated in this country, were brought to light, it affords a singular confirmation of the latter. Preble stated it as his opinion, that the serpent he saw was from one hundred to one hundred and fifty feet long, and larger than a barrel.

This length seems excessive, but Fenimore Cooper remarks that it agrees with that given him by another officer more than twenty years afterwards.

> On that occasion the serpent was seen quite near by, for fully an hour, and once was viewed under water, as it passed beneath the boat. The writer's informant said it was his opinion that the animal was nearer one hundred and fifty than one hundred feet in length, and he supposed him to be of the size of a wine-pipe.

Upon which Fenimore Cooper very shrewdly observes:

> There appears an indisposition in the human mind to acknowledge that others have seen that which chance has concealed from our own sight. Travelers are discredited and derided merely because they relate facts that lie beyond the circle of common acquisitions; and the term 'travelers' stories' has its origin more in a narrow jealousy than in any prudent wariness of exaggeration.

Thus in the eighteenth century, as at the beginning of the nineteenth, the accounts of sea-serpents in America were treated, even locally, with the greatest scepticism.

But in 1817 the affair took quite a different turn. So many people, and very trustworthy ones, saw a sea-serpent cruising off Massachusetts that American scientists were excited: the old reports of the previous century[1] were suddenly scanned with a keen eye, and it came to light that in 1802 the Rev. Abraham Cummings, a missionary well known in Maine, had spent a long time watching one of these monsters, sometimes barely 50 yards away, while he was sailing from island to island in the course of his duties in company with his wife, his daughter and another young lady of their acquaintance. The three women were able to corroborate his evidence.

[1] These included uncircumstantial reports of sightings on the east coast by Captain Lillis before 1809, by a Mr Miller before 1811, and by two people from Mount Desert Island before 1817.

Until then Cummings had not believed in the tales of sea-serpents current among his parishioners. But now he was convinced, and his story came to the ears of the Rev. Alexander McLean, who asked for further details. He replied with a letter which was eventually passed on to the Secretary of the American Academy of Arts and Sciences, who, alas, did not publish it, but left it lying in a drawer for some eighteen years. The important passage is as follows:

> It was some time in July 1802 that we saw this extraordinary sea monster, on our passage to Belfast, between Cape Rosoi and Long Island. His first appearance was near Long Island. I then supposed it to be a large shoal of fish with a seal at one end of it, but wondered that the seal should rise out of water so much higher than usual; but, as he drew nearer to our boat, we soon discovered that this whole appearance was but one animal in the form of a serpent. I immediately perceived that his mode of swimming was exactly such as had been described to me by some of the people of Fox Islands, who had seen an animal of this kind before, which must confirm the veracity of their report. For this creature had not the horizontal, but an ascending and descending serpentine motion. This renders it highly probable that he never moves on land to any considerable distance and that the water is his proper element. His head was rather larger than that of a horse, but formed like that of a serpent. His body we judged was more than sixty feet in length. His head and as much of his body as we could discover was all of a blue colour except a black circle round his eye. His motion was at first but moderate, but when he left us and proceeded towards the ocean, he moved with the greatest rapidity.

McLean showed this letter to the Rev. Alden Bradford who wrote to Cummings for further details and asked whether it might not have been a school of porpoises swimming in Indian file. Cummings replied:

> Who ever saw fifty or sixty porpoises moving after each other in a right line, and in such a manner that those who formed the rear were no larger than haddock or mackerel, and none but the foremost shewed his head? Who ever saw a serpent's head upon a porpoise or whale? We saw him swim as far as from Long Island to the Cape before he disappeared. His head and neck all the time out of water. Now who ever saw a porpoise swim so great a distance without immerging at all?

Bradford's doubts were valid, and Cummings answered them satisfactorily. But nothing is strong enough to batter down the doors of Incredulity, and this naïve and indefensible explanation will recur again and again, despite the protestations of those who have seen the monster swimming with its head held out of the water for long periods at a time.

As to the remarkable phenomenon of a serpent undulating up and down, Cummings replied:

> I am not sure that this motion was ascending and descending; all we can say is, *it appeared so to us* (for he was seen not only by me, but by three other persons). His real motion might be horizontal.

This apparent undulation in a vertical plane is certainly one of the most striking features of the Norwegian and New England sea-serpents, for almost all the witnesses mention it. At this time there was little mention of the beast in the newspapers, few Americans could have read Pontoppidan, and it is hardly likely that the various witnesses were influenced by one another or by earlier writings. W. Lee, who saw a sea-serpent, which he reckoned to be 200 feet long, 'many years before 1819' near Cape Breton in Newfoundland described it swimming 'in flexuous hillocks'. Captain Elkanah Finney who watched one with a telescope at Warren's Cove in Cape Cod Bay gives a similar, but much more detailed, description:

> It then came towards me, in a southerly direction, very rapidly, until he was in a line with me, when he stopped, and lay entirely still on the surface of the water. I then had a good view of him through my glass, at the distance of a quarter of a mile. His appearance in this situation was like a string of buoys. I saw perhaps thirty or forty of these protuberances or bunches, which were about the size of a barrel. The head appeared to be about six or eight feet long, and where it was connected with the body was a little larger than the body.[1] His head tapered off to the size of a horse's head. I could not discern any mouth. But what I supposed to be his under jaw had a white stripe extending the whole length of the head, just above the water. While he lay in this situation, he appeared to be about a hundred or a hundred and twenty feet long. The body appeared to be of a uniform size. I saw no part of the animal which I supposed to be a tail. I therefore thought he did not discover to me his whole length. His colour was a deep brown or black. I could not discover any eyes, mane, gills, or breathing holes. I did not see any fins or legs. The animal did not utter any sound, and it did not appear to notice any thing. It remained still and motionless for five minutes or more.

Therefore, since a sea-serpent may look like a 'string of buoys' even when lying still—and this will often be confirmed by other witnesses, this appearance is not necessarily the result of undulating motion. When the beads on the necklace are many and close together, as they are here, they must clearly be humps. They can only be undulations of the body if they are large and thus relatively few. This is one point established. Of course there is no reason why an animal covered with humps should not move by undulating up and down.

The day after he had seen the monster Captain Finney rose very early to try to see it again. When the wind dropped it appeared, and this time he watched it for a couple of hours diving again and again, remaining five to ten minutes under water. He thought that it was fishing for food, which did not surprise him, as there were plenty of mackerel, herring and other fish in Warren Cove.

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[1] By the 'head' obviously means all the front part of the animal visible above water.

Captain Finney's evidence, like Cummings's, lay fallow until 1817, the year when everybody on the Massachusetts coast became 'sea-serpent conscious'.

On 6 August 1817 two women saw a sea-monster like a huge serpent come into the harbour of Cape Ann which lies north of Gloucester roads. Little attention was paid to their story, although it was confirmed by several fishermen, but a week later so many people known to be trustworthy claimed to have seen the animal nearby, that the whole country round was much excited. On 10 August a seaman called Amos Story saw it from the shore. It was near Ten Pound Island in the shelter of Gloucester roads. On 12 August, Solomon Allen 3rd, a shipmaster, saw it from a boat, and again during most of the following day, and for a short time on the fourteenth, when it was watched by twenty or thirty people, including the Justice of Peace of Gloucester, the Hon. Lonson Nash. On that day four armed boats were sent in pursuit of the monster, and Matthew Gaffney, a ship's carpenter, fired at it at almost point-blank range, apparently hitting it with a musket ball in the head, but doing it no harm.

There was no doubt about it, the fabulous sea-serpent was there, large as life, in Gloucester harbour. The Linnaean Society of New England decided to meet as quickly as possible at Boston to set up a Committee of Inquiry. It was formed on 19 August and consisted of three carefully chosen members: a judge, the Hon. John Davis; a doctor, Jacob Bigelow; and a naturalist, Francis C. Gray. Their first act was to ask Mr Lonson Nash to collect the sworn evidence on the spot of those who had been able to have a good look at the monster.

Meanwhile the animal continued to show itself. Despite being shot at it had not left Gloucester harbour. On 15 August a merchant called James Mansfield saw it about 180 yards from the shore. On 16 August it was not only seen from the shore by Colonel T. H. Perkins and his friend Mr Lee, but also by the captain of a ship and the whole crew. On 17 August four new witnesses are added: three were at sea and were able to come so close they could touch it with their oars, and William Foster was on shore. On 18 August it was watched by William Pearson and another man in a sailing boat.

On 22 August there was something new. A woman's attention was drawn to something that looked like a big tree-trunk washed up on the eastern point of Ten Pound Island about half a mile away: it was lying partly on the rocks and partly in the water. Intrigued, she took a telescope, and, as she watched, it began to move. Just then some domestic affair distracted her attention, and when she looked again it had gone. Oddly enough it was later learnt from a quite independent source that on the same day Mr and Mrs Mansfield who were on a bank overlooking the harbour clearly saw the serpent stretched out partly over the white sandy beach which had 4 or 5 feet of clear water over it.

On 23 August Amos Story saw the monster again, apparently asleep on the surface. During the following days the crews of several coasting vessels saw it further out to sea, in some cases without being aware that it had been seen from the shore. It could not therefore be a case of mass hallucination. Moreover the sea-serpent was reported on 28 August about two miles east of the eastern point of Cape Ann by Captain Sewell Toppan of the schooner *Laura* and two of her seamen while they were on a voyage from Newburyport to Boston. And towards the end of August it was also seen near Cape Ann by a revenue cutter, and Customs men are never easily deceived. Finally it is possible that it was the same beast that was seen twice, on 3 and 5 October by James Guion and Judge Thomas Hertell respectively, in Long Island Sound, almost as far up as New York itself.

The Hon. Lonson Nash did his work well. He questioned the witnesses separately, having first asked them not to discuss what they had seen with one another. So that he should influence them as little as possible they first described what they had seen in their own words. To complete their affidavit Nash asked them a series of questions chosen if possible from the list drawn up by the Linnaean Society, which ran thus: ,

1. When did you first see this animal?
2. How often and how long at a time?
3. At what times of the day?
4. At what distance?
5. How near the shore?
6. What was its general appearance?
7. Was it in motion or at rest?
8. How fast did it move, and in what direction?
9. What parts of it were above the water and how high?
10. Did it appear jointed or only serpentine?
11. If serpentine, were its sinuosities vertical or horizontal?
12. How many distinct portions were out of water at one time?
13. What were its colour, length and thickness?
14. Did it appear smooth or rough?
15. What were the size and shape of its head, and had the head ears, horns, or other appendages?
16. Describe its eyes and mouth.
17. Had it gills or breathing holes, and where?
18. Had it fins or legs, and where?

19. Had it a mane or hairs, and where?
20. How did its tail terminate?
21. Did it utter any sound?
22. Did it appear to pursue, avoid or notice any thing?
23. Did you see more than one?
24. How many persons saw it?
25. State any other remarkable fact.

Few significant features could thus be left in doubt. Eight affidavits, as detailed as one could wish, were collected in Gloucester and three others in Boston. To these were added Nash's own recollections and comments—for he was both witness and judge—a communication from the Rev. William Jenks about Cummings's 1802 report and four other appearances of the sea-serpent in New England in the previous century and two other more recent ones, Captain Elkanah Finney's circumstantial report about what he had seen in 1815 and the text of old Bishop Pontoppidan.

The Linnaean Society was taking up the inquiry where the bishop had left off half a century before, and it was pursuing it with the strict rigour of modern scientific method. As an example here is an affidavit, perhaps the most significant and also the most dramatic:

> I, MATTHEW GAFFNEY, of Gloucester, in the County of Essex, Ship carpenter, depose and say: That on the fourteenth day of August, A. D. 1817, between the hours of four and five o'clock in the afternoon, I saw a strange marine animal, resembling a serpent, in the harbour in said Gloucester. I was in a boat, and was within thirty feet of him. His head appeared full as large as a four-gallon keg, his body as large as a barrel, and his length that I saw, I should judge forty feet, at least. The top of his head was of a dark colour, and the under part of his head appeared nearly white, as did also several feet of his belly, that I saw. I supposed and do believe that the whole of his belly was nearly white. I fired at him, when he was the nearest to me. I had a good gun, and took good aim. I aimed at his head, and think I must have hit him. He turned towards us immediately after I had fired, and I thought he was coming at us; but he sunk down and went directly under our boat, and made his appearance at about one hundred yards from where he sunk. He did not turn down like a fish, but appeared to settle directly down, like a rock. My gun carries a ball of eighteen to the pound; and I suppose there is no person in town, more accustomed to shooting, than I am. I have seen the animal at several other times, but never had so good a view of him, as on this day. His motion was vertical, like a caterpillar.

After which Nash put a string of questions to the witness:

Q. How fast did it move?
A. I should say he moved at the rate of a mile in two, or at most three minutes.
Q. Did it appear smooth or rough?
A. I thought it smooth, when I was endeavouring to take aim at him, and will not say positively, that he was smooth, though that is still my belief.

Q. Does he turn quick and short, and if so, what is the form of path that he makes, in turning?

A. He turns quick and short, and the first part of the curve that he makes in turning, is in the form of the staple; but his head seems to approach rapidly towards his body, his head and tail moving in opposite directions, and when his head and tail come parallel, they appear almost to touch each other.

Q. Did he appear more shy, after you had fired at him?

A. He did not; but continued playing as before.

Q. Who was in the boat with you, when you fired at the serpent?

A. My brother Daniel, and Augustin M. Webber.

Then the witness was sworn on the Bible as to the truth of his statements.

From a similarity in style in the various affidavits it is clear that one man—Nash or his clerk—edited the statements as they were taken down. But the comments and criticisms—some of them severe—which follow some reports show clearly that the judge never tried to make them agree with one another or with his own views. There are indisputable differences and even some contradictions between them, but they merely affect details, and can almost always be explained as errors of judgment. The considerable collection of evidence from people from many walks of life, lawyers, fishermen, divines, sea-captains, retired soldiers, tradesmen, merchants and housewives, is remarkably unanimous and enables us to draw the main features of the creature they saw.

Its general appearance was like that of a huge snake. But it seemed to have smooth skin: it was dark brown, almost black, sometimes looking bluish, except on the under part of the body which was rather whitish. Some witnesses have mentioned lighter patches or stripes on the darker background.

The animal showed a length of 40 to 50 feet above water and altogether must have measured some 65 feet. The visible part of its body was 10 inches to a foot in diameter. It always held its head some 6 inches to a foot out of the water, but never more than 3 to 6 feet like the sea-serpents seen off Maine.

It seemed to undulate in a vertical plane. On the other hand when it came to the surface it usually appeared as a series of little humps, which might be as many as ten, and according to some witnesses many more. When it was still it sometimes looked humped, but sometimes its spine was in a single smooth line. It also must have been very flexible in a horizontal direction, because it could make sharp horseshoe bends. When it dived it went down suddenly, like a stone.

It seemed to be able to move at great speed, half the witnesses say that at times it moved at 22 to 35 knots, and some that it went at 40 to 45 knots and even at 70 knots. Compared with this, the big whales move at about 20 knots but can dive much faster for short distances. A hump-back whale has been known to touch 25 miles per hour and a sei-whale 35 miles per hour.

Gavin Maxwell is convinced that killer-whales can exceed 30 knots. The very small cetaceans, dolphins, porpoises and so on, are even faster and can certainly reach 40 knots. But only fishes, such as spearfish, sailfish, marlin and swordfish, can exceed 60 knots.

The Gloucester sea-serpent's rather flattened head has been described as like a snake's or a turtle's. Nobody was able to see any eyes. One witness saw an open mouth, and another saw, sticking out of the front of the head, a long pointed 'prong or spear', which might have been the tongue. Nobody noticed nostrils or blow-holes, nor did they see gill-slits or a mane.

The animal did not seem to take much notice of boats. On the other hand it was not in the least aggressive. It was very harmless—to the human species at least—and was believed to feed on small fish like herrings.

None of this is in the least fantastic, there is nothing to suggest the products of the imagination. The report that agrees least with the others is that of Solomon Allen 3rd. He said the beast was between 80 and 90 feet long, that its head was nearly as big as a horse's and held 2 feet out of the water, and that he had seen no less than fifty humps. He is indeed the only one of some fifteen witnesses to have sworn to such large dimensions; and it seems likely that he, and he alone, was much inclined to exaggeration. We may also suspect his categoric statements—which no other witness makes—that the skin was rough and scaly and the undulation of the body horizontal. Of course these features agree with those of snakes—but they have clearly been invented or rather suggested by the observer's preconceived ideas about the nature of the beast. For it is extremely improbable that Allen saw another unknown animal of a very different kind.

When the committee of the Linnaean Society gave its own opinion about the mysterious animal's identity, it showed that it had just as strong preconceived notions as Solomon Allen 3rd, and this prevented it from drawing the conclusions which followed from the generally concordant evidence.

The way the animal turned round by first making a fairly large curve with the front part of the body and then swimming with the front parallel to the tail but going in the opposite direction shows that the animal's body was not all equally flexible and that it must have a rather more solid thorax joined to a long and more flexible tail. This should have raised doubts whether it was really a snake.

Moreover the beast's ability, which several witnesses noticed, to dive straight down without twisting its body in the least, could only be explained if it had fins or flippers on the side of its body and hidden under the water. Nobody suspected that there were any such members, which would also have ruled out the snake theory.

Apart from the flattened shape of the head, the slender neck and length of the animal, it was the numerous humps rising behind the head as if they were coils or folds in the body which suggested the comparison with a snake, even though a reptile, because of the structure of its spinal column, is quite incapable of such tight bends. The beast's undulating movement increased the illusion of a snake's reptation, but as it was vertical it could not have been done by a reptile. The Massachusetts sea-serpent could not possibly have been a snake, and had the Committee of the Linnaean Society but realized this they would have saved themselves from a dreadful blunder.

The authorities were now convinced that the sea-serpent was not a hallucination. A price was put upon its head. Traps, nets and hooks were set for it, and an appeal went out to the Nantucket whalers. Meanwhile the beast itself made off to more hospitable waters.

The inquiry, so carefully begun, ended most lamentably. Why, wondered the experts, had the beast spent so much time close inshore? The Linnaean Society, assuming, perhaps rather foolishly, that the beast was a reptile, drew the logical conclusion that it had, like the sea-turtles, come to land to lay eggs. And a feverish search for its supposed eggs began.

I need hardly say that none were found. But a month after the last sighting of the monster two little boys, who were playing in a field near Loblolly Cove east of Cape Ann, found a little blackish snake 3 feet long. At their shrieks their father came running and was astonished to see that all along the snake's back were a large number of little bumps—just like the sea-serpent. And all this had happened some 50 or 60 yards from the sea. The man stabbed the little monster through the head with a fork and sold it to a man named Beach who hoped to get rich by exhibiting it. But first he sent it to the Linnaean Society, pointing out that it must be a young sea-serpent that had hatched from an egg laid by the monster during its recent visit. The Committee accepted this astonishing suggestion without the least demur, examined the curious specimen with enthusiasm, dissected it minutely, and had some extremely fine anatomical plates drawn for the Society's *Transactions* (Plate 24). They found that the baby sea-serpent was certainly closely related to the local Common Black Snake (*Coluber constrictor*) but decided that it must be a related species which they christened *Scoliophis atlanticus*, or Atlantic Humped Snake. All they still had to do was to prove that the animal belonged to the same giant species that had been seen in Gloucester harbour. Their description takes up three and a half pages and ends:

> On the whole, as these two animals agree in so many conspicuous, important and peculiar characters, and as no material difference between them has yet been clearly pointed out, excepting that of size, the Society will probably feel justified in considering them individuals of the same species, and entitled to the same name, until a more close examination of the great Serpent shall have disclosed some difference of structure, important enough to constitute a specific distinction.

When the *Report of a Committee of the Linnaean Society of New England* reached Europe, Ducrotay de Blainville, who was then professor of zoology and comparative anatomy at Paris, reviewed it in the *Journal de Physique, de Chimie et d'Histoire naturelle.* What interested him particularly was the discovery of a new species of snake 'which is really most singular, especially in the unusual disposition of its spinal column, its sides, and in its means of locomotion, which is to be seen in few, if any, other snakes'. And while he found it hard to deny the existence of the great sea-serpent, which had been seen so often near Cape Ann, he saw no good reason to connect this huge animal with the little specimen from Loblolly Cove. Whereupon Alexandre Lesueur, the scientist who first explored the fish-life of the American Great Lakes, wrote that he had himself felt obliged to dissect a bit of the famous *Scoliophis atlanticus* and that it was merely a Common Black Snake that had been deformed by disease or injury.

> I have no doubt [he wrote] that this individual is in a quite abnormal condition; perhaps after receiving a number of blows in its youth, the injured parts remained damaged and were unable to grow, at least in a regular manner, while those which were unaffected went on moving as they should, and were able to develop fully.[1]

The sceptics and mockers had a field-day. The whole inquiry, though begun with such strict care, was blown away in a gale of laughter. People felt, not unreasonably, that experts who could make so grotesque a blunder could not tell the true from the false and had been taken in by hoaxers or madmen. The public swore—a little prematurely—that they would not be taken in again.

But Lesueur had done no more than point out that the so-called *Scoliophis* was a pathological freak. He had even added, 'As to the famous and gigantic sea-serpent, of which this is supposed to be the young, if it comes back next summer I have firmly decided to go and see it for myself.' For the public, however, the whole question had been settled.

Despite all this 1817 was a lucky year for the sea-serpent. For it was in 1817 that the great French-American naturalist Constantin Samuel Rafinesque-Schmaltz gave the sea-serpent a scientific name, publishing a description of the Gloucester monster in the *American Monthly Magazine* giving it the new generic name of *Megophias* or 'big snake'. The article in which it appears was reprinted in an enlarged form in the *Philosophical Magazine* in 1819 under its original title, 'Dissertation on Water-Snakes, Sea-Snakes and Sea-Serpents'.

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[1] In the plate the little snake is shown undulating up and down, which would have meant twisting in a quite abnormal way for a reptile.

After listing nine species of sea-snakes, the last of which was no more than 8 to 10 feet long, Rafinesque continues:

> This last species appears to be the largest real Sea-Snake which has fallen under the personal observation of naturalists as yet. But larger species still have been noticed at different periods. If I had the time and opportunity of perusing all the accounts of travellers and historians, I could probably bring many into notice; but this tedious labour must be postponed, and I must warn those who may be inclined to inquire into the subject, not to be deceived by the imperfect and exaggerated accounts of ancient and unknown writers. Whenever they mention neither the scales nor tail of their Sea-Serpents, or when they assert they had no scales, or had gills or fins, you must in all those instances be certain that they are real fishes rather than serpents. There might, however, be found some Sea-Snakes without scales, since there are such land snakes; and there are fishes with scales and yet without fins: but there are no fishes without gills, and no snakes or serpents with gills:—in that important character the classical distinction consists.
>
> Nearly all the writers whom I can remember, have been unacquainted with that obvious distinction; and they have, in imitation of the ancient Greek and Roman writers, given the name of Sea-Snakes to the large eels or fishes they happened to observe. This I apprehend is the case with Pontoppidan, in his Natural History of Norway; with Mongitore in his Remarkable Objects of Sicily; with Leguat, in his Travels to Rodriguez Island, &c. Their observations, and the facts they record, are notwithstanding equally valuable, since they relate to monstrous unknown fishes, which seldom fall under the observation of men.

Rafinesque was, of course, wrong about Pontoppidan, but he was quite right about Mongitore and Leguat.

In his book *Della Sicilia ricercata nelle cose più memorabili* (1742–3) Antonino Mongitore lists a number of Mediterranean sea-monsters. Among his citations from Sicilian chronicles we find a huge octopus, various big whales, and several fish which are hard to identify. The only possible sea-serpents included in this scrapbook are those which ruined the tunny-fishermen at Sarica near Castroreale:

> They do not use the tunny-net there but with great losses, for the fishermen have seen there fish bigger than the biggest tunny, spotted in various colours, having in many respects the shape of serpents, and which are terrible: penetrating through the tunny-net, they escape by violence, tearing the meshes and thus letting the tunny escape.

These are probably very big moray eels with their characteristic spots, which may reach a length of 10 feet and are as savage as they are voracious. It was no doubt another sort of eel which François Leguat and his companions caught between 1693 and 1696, on the rocks of Mauritius, where the Dutch governor of that island had cruelly cast away these French Huguenots seeking a colony.

> It was [says Leguat] a terrible serpent that weighed more than 60 pounds which we in our great innocence took for a lamprey or an eel. This supposed eel seemed to us, in truth, most extraordinary, but the animal had fins, and we did not know there were such things as sea-snakes. Besides, we were so accustomed to discovering things that were new to us on land and sea, that the figure of this beast made us conclude nothing but that it was a species of eel that we had not seen before and which resembled a snake much more than do the common eels.
>
> In fact it had the head of a snake or a crocodile, with long, sharp hooked teeth ... but of quite a different size. This is a strange eel, we thought. What a monster! What terrible teeth![1]

It may have been a strange eel, but it was an eel without doubt: a conger or a moray. A 60-pound conger is by no means extraordinary. In 1933 an angler caught one weighing 72 pounds at Dungeness in the Straits of Dover. In 1879 a 127-pound conger was sold in London. The *Illustrated London News* of 17 September 1904 published a photograph of a 160-pound specimen caught off Portsmouth. It was 9 feet long. And there are morays 10 feet long.

Rafinesque's article, unsensational though it seems, in fact marks an important step in our knowledge of the great sea-serpent. For the first time an author—and an established naturalist at that—realized that *all* the sea monsters described as sea-serpents were not necessarily true serpents. Rafinesque's remarks now seem to us glaringly obvious, but we must remember that at the beginning of the last century they went against a universal belief thousands of years old, founded perhaps in the depths of the unconscious mind and supported by centuries of superstition. It had been self-evident that the leviathan must be a serpent because it was a personification of the Devil who tempted Eve. To sweep this away with one stroke of the pen needed courage and a clear mind.

But revolutions are not won by a single blow. After his wise remarks, Rafinesque, misled perhaps by some reports and unable quite to shake off the age-old assumptions, unfortunately takes the usual view about the Gloucester sea-serpent:

> Among the four different animals which have lately been observed by Americans, and named Sea-Serpents, only one (the Massachusetts Serpent) appears to be such; another is evidently a fish, and two are doubtful. I shall refer a few remarks on each.

What were these four animals? The first was the Massachusetts sea-serpent, and here Rafinesque had been as wrong-headed as the Linnaean Society in his interpretations of the evidence. He gives the beast scales on the basis of Solomon Allen 3rd's rather suspect evidence and a tail

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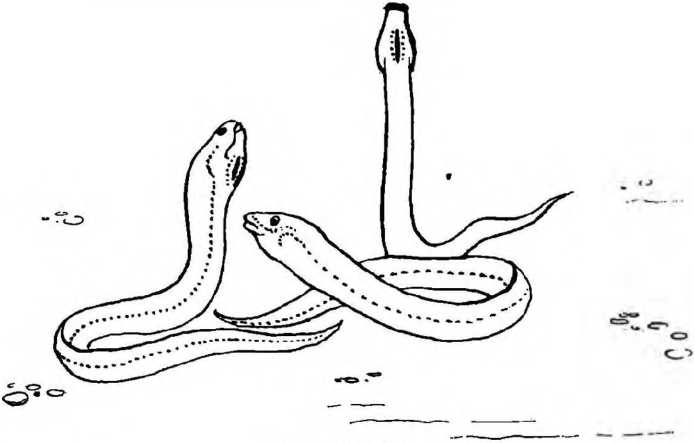
[1] Compare Plate 71.

'compressed, obtuse, and shaped like an oar' for no apparent reason whatsoever, and is thus able to write:

> It is evidently a real Sea Snake, belonging probably to the genus *Pelamis*, and I propose to call it *Pelamis megophias*, which means Great Sea Snake Pelamis. It might however be a peculiar genus, which the long equal scales seem to indicate and which a closer examination might have decided: in that case the name of *Megophias monstrosus* might have been appropriated to it.

Rafinesque's second sea-serpent was observed by one Captain Brown in July 1818 north of Ireland when he was on a voyage from America to St Petersburg:

> In swimming [wrote Rafinesque] the head, neck and forepart of the body stood upright like a mast: it was surrounded by porpoises and fishes. It was smooth, without scales, and had eight gills [i.e. gill-slits] under the neck; which decidedly evinces that it is not a snake, but a new genus of fish! ... Dark brown above, muddy white beneath: head obtuse. Capt. Brown adds, that the head was two feet long, the mouth fifteen inches, and the eyes over the jaws, similar to the horse's; the whole length might be 58 feet.

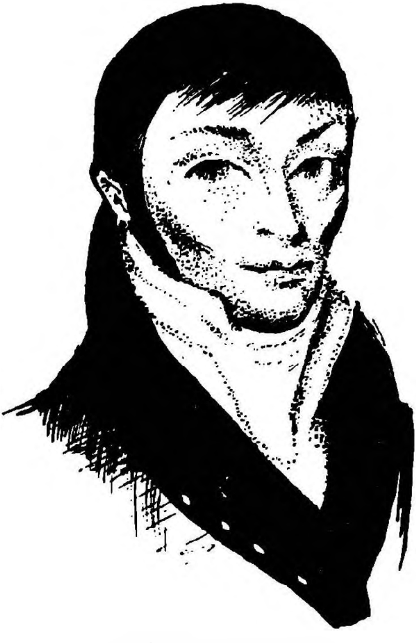


32. *Synbranchus*

Rafinesque thought his monster was related to certain eel-like fishes, the genera *Sphagebranchus* (a sort of moray) and *Synbranchus* which belong to a very peculiar group, the Synbranchs, in which the gill-slits, usually on the side of the head, are joined under the throat, and there are no pectoral or pelvic fins. But as these fish have only one or two gill-slits Rafinesque created the new genus and species, *Octipos bicolor*, for Captain Brown's monster.

If we could check that there really are eight gill-slits the problems of the North Atlantic sea-serpents would be solved—or at least of some of them—for this would show that they were fish. But as Dr Oudemans pointed out the apparent gill-slits could be caused by rolls of fat like the double chins on a fat man. At all events Rafinesque was the first naturalist to consider that a frequent type of sea-serpent was a giant eel, an explanation that is very popular in scientific circles today.

The third of Rafinesque's animals, which he calls the 'scarlet sea-serpent' was seen in 1816 in the Atlantic near the surface by the whole crew of a ship from New York. It was probably an *Architeuthis*, since these cephalopods are often this colour, which is otherwise very rare among large sea-animals. The pointed head was probably the end of its tail, which it holds up in front when it swims backwards in its usual manner. The length of 40 feet is by no means too large for an *Architeuthis*. But at this time practically nothing was known about the giant squid, and Rafinesque could hardly draw the obvious conclusion. He preferred to suppose, with no evidence whatever, that it was a fish, perhaps of his genus *Octipos*.



33. Rafinesque as a young man

His fourth sea-serpent is the one W. Lee saw off Newfoundland around 1805 with its 'flexuous hillocks', dark green back, and length of over 200 feet. 'This,' says Rafinesque, 'appears to be the largest on record, and might well be called *Pelamis monstrosus*; but if there are other species of equal size, it must be called then *Pelamis chloronotis*, or Green-back Pelamis.'

From all these hasty pronouncements there is one thing we must keep. The sea-serpent so thoroughly observed and described in New England has received a scientific name, and because of the conventions of zoological nomenclature it will thereafter be known as *Megophias monstrosus* Rafinesque, until and unless we find there has been a mistake.

Rafinesque's sponsorship was hardly likely to improve the sea-serpent's reputation in the scientific circles of those days. There have been many colourful natural scientists, but none so extravagant as Constantin Samuel Rafinesque—the least natural of all natural scientists. There were many jokes at the expense of the behaviour of this caricature of a scientist, his extraordinary hair-style, the hermit's beard that he sometimes grew, his disreputable clothes, his disrespect for authority, his collector's fever which when once aroused by some rare or unknown specimen made him forget everything else, and his flood of writings which touched upon absolutely everything. He was treated as a maniac, a madman, an inspired idiot.

Rafinesque was certainly very neurotic. But what nerves could withstand the succession of disasters which befell him? And his were fertile ground in which manias might grow. He was born in the outskirts of Constantinople in 1783, and probably inherited his adventurous, unsociable and unbalanced character from his father, an importer from Marseilles who was always at sea and died early away from home. The son adored his mother—who was still young—and her remarriage was a bitter blow. When he himself was married and living in Sicily, having already travelled much of the world, his first child died and his wife left him for a travelling comedian. In 1815 he decided to leave all this behind and go to America, but the ship with him and all his belongings on board was wrecked on the rocks of Long Island. He swam ashore, but he lost his collections, which comprised fifty cases of dried plants, half a million shells, his great indexes, his precious library, hundreds of copper engravings and numerous unpublished manuscripts, the results, in fact, of twenty years of work.

After several years of modest existence, Rafinesque, of whom such great men as Candolle and Cuvier already thought highly, was appointed professor of natural sciences at the new University of Lexington. But, alas, because of his eccentricities he was the perfect butt for student hoaxes. He was also the laughing-stock of his colleagues, who were jealous of his learning and original views and were offended at the passion with which he defended his opinions, quite regardless of their feelings. In the end, after a particularly violent squabble with the Rector, he was thrown out of the university. Today the same university is proud that he was once part of their faculty, and American historians consider him as one of the most remarkable men in the history of American science.

He described several thousand new species—and most of his descriptions still stand—and he added more than anyone else to our knowledge of North American flora and fauna. He was before Darwin, but he realized that species were continually changing. He was a true humanist in Terence's sense, for there was no branch of human knowledge which he did not touch with his brilliant and revolutionary mind.

Yet during his life he suffered little but neglect, poverty and bitter humiliation. After being thrown out of Lexington, he became more and more embittered and wretched, dirty and dejected, wasted away by his deprivations, by consumption and cancer, yet he never gave up his dreams of glory and wealth. With better luck, he thought, he might yet be another Humboldt or Linnaeus. We now know that he might have done even more.

Rafinesque made more and more attempts to raise money for scientific publications and for his remarkable inventions. In the squalid hovel where he lived in Philadelphia he invented a herbal elixir, which he believed cured his tuberculosis, and then made samples which he sold at the chemists or even from door to door.

There is a striking parallel between the fate of Rafinesque, sponsor of the sea-serpent, and that of Pierre Denys de Montfort, godfather of the giant squid, another ill-fated naturalist who lived at the same time. Both were unbalanced and erratic, great travellers interested in everything, learned, brilliant, ambitious and proud, eccentric in their habits. They were both misunderstood and ridiculed. They both ended their lives in the humblest tasks—one collecting shells for dealers of specimens, the other selling herbal potions—and they both died in appalling misery at the age of fifty-six.

Denys de Montfort was found dead of drink in a Paris gutter. Rafinesque's end was more worthy, but not without its macabre humour. After long sufferings due to cancer of the liver and stomach he died at his desk on 18 September 1840. In his hand he held a quill with which he had written, 'Time renders justice to all alike.' Rafinesque was so penniless that his landlord wanted to sell his body to the Medical School to pay the arrears of rent. But two faithful friends saved him from this ignominy by coming in the night and surreptitiously lowering his body out of the window on a rope so that he could be buried in a pauper's grave.

The sea-serpent, that outcast from zoology, that indefatigable traveller, refusing to be captured, fantastic, proud, ridiculed by some and feared by others, indeed had the sponsor it deserved. Let us hope that it does not end like him, miserable, alone, unknown, or its remains threatened by irresponsible greed.

While the Linnaean Society of New England was undertaking its inquiry the whole learned world took an excited interest. Letters flew back and forth between such men as Edward Everett—who became an American statesman but was then in Paris—Friedrich von Blumenbach, professor of zoology at Göttingen, General David Humphreys of the Linnaean Society, Sir Joseph Banks, president of the Royal Society, Thomas Say of Philadelphia, William E. Leach, Alexandre Lesueur and Ducrotay de Blainville. Professor W. D. Peck, an American scientist whose reputation then stood much higher than poor Rafinesque's, collected various early reports and pronounced that the sea-serpent existed and was a huge snake. He was merely repeating Rafinesque, but no matter.

Then, after the appalling bloomer made by the Boston committee, the whole situation changed. No scientist dared take the sea-serpent seriously. Moreover a whole series of hoaxes at the poor monster's expense were perpetrated while it was still hot news.

First there was the tall story which the Rev. William Jenks naïvely passed on to the Linnaean Society in 1817. A Mr Staples of Prospect told the innocent clergyman 'that about 1780, as a schooner was lying at a mouth of the river, or in the bay, one of these enormous creatures leaped over it between the masts—that the men ran into the hold for fright, and that the weight of the serpent sunk the vessel "one streak" or plank. The schooner was of about eighteen tons.'

Whether this is a complete invention, or an exaggeration based on some other incident (boat sunk by a tornado, or even perhaps by a giant squid) it is in complete contradiction with all the recent reports of sea-serpents which, except in a few suspect cases, are always described as harmless and not given to attacking without provocation. In fact the tale is a bit too like the old Scandinavian tales and sounds as if it was based on the woodcut in Olaus Magnus (Fig. 15 on page 92).

The next hoax, which appeared in several American newspapers in the spring of 1818, is much less fantastic and therefore fooled more people. All the same there is clear internal evidence—which the reader with a detective turn of mind should be able to spot—that it is quite apocryphal.

> I, the undersigned, Joseph Woodward, captain of the Adamant schooner of Hingham, being on my route from Penobscot to Hingham, steering W.N.W., and being about 10 leagues from the coast, perceived last Sunday, at two P.M. something on the surface of the water, which seemed to me to be of the size of a large boat. Supposing that it might be part of the wreck of a ship, I approached it; but when I was within a few fathoms of it, it appeared, to my great surprise,

> and that of my whole crew, that it was a monstrous serpent. When I approached nearer, it coiled itself up, instantly uncoiling itself again, and withdrew with extreme rapidity. On my approaching again, it coiled itself a second time, and placed itself at the distance of 60 feet at most from the bow of the ship.
>
> I had one of my guns loaded with a cannon ball and musket bullets. I fired it at the head of the monster; my crew and myself distinctly heard the *ball* and bullets strike against his body, from which they rebounded, as if they had struck against a rock. The serpent shook his head and tail in an extraordinary manner, and advanced towards the ship with open jaws. I had caused the cannon to be reloaded, and pointed it at his throat; but he had come so near, that all the crew were seized with terror, and we thought only of getting out of his way. He almost touched the vessel; and had not I tacked as I did, he would certainly have come on board. He dived; but in a moment we saw him appear again, with his head on one side of the vessel, and his tail on the other, as if he was going to lift us up and upset us. However, we did not feel any shock. He remained five hours near us, only going backward and forward.
>
> The fears with which he at first inspired us having subsided, we were able to examine him attentively. I estimate that his length is at least twice that of my schooner, that is to say, 130 feet; his head is full 12 or 14; the diameter of the body below the neck is not less than six feet; the size of the head is in proportion to that of his body. He is of a blackish colour; his ear-holes are about 12 feet from the extremity of his head. In short, the whole has a terrible look.
>
> When he coils himself up, he places his tail in such a manner, that it aids him in darting forward with great force: he moves in all directions with the greatest facility and astonishing rapidity.
>
> (Signed) Joseph Woodward.
>
> Hingham, May 12, 1818.
>
> This declaration is attested by Peter Holmes and John Mayo, who made affidavit of the truth of it before a justice of peace.

The official-looking postscript ought to have given the game away, for it is more important to give the name of the Justice of Peace than those of two witnesses whose identity is much more difficult to check. All the same Captain Woodward's report was reprinted in 1818 without the least critical comment by the *Quarterly Journal of Science, Literature and the Arts of the Royal Institute of London*, and by the great Lorenz Oken in his review *Isis*. Thirty years later Edward Newman, editor of the *Zoologist*, also reprinted it, and this evoked a critical reply from W. W. Cooper who wrote:

> Captain Woodward says, the beast moved with *extreme*, or, as he afterwards expressed himself, *astonishing* rapidity; that when he fired at the monster it was sixty feet at the most from the bow of the ship, which appears to have been the nearest part of the vessel to the animal; but after he fired the beast advanced towards his ship; that he had caused his cannon to be reloaded and pointed at its throat,—of course while it was advancing towards his vessel,—but before he could

> fire his crew were seized with terror; that he tacked and got out of its way. So here we have an animal sixty feet from the ship, moving with astonishing rapidity *towards the ship*, which it appears was also moving *towards the animal*, and yet allowing time to load a cannon, point it at its throat, and afterwards to tack to get out of its way. Truly a most accommodating serpent! But again, the animal remained five hours near the ship, allowing itself to be minutely examined, but yet no further attempt to kill the beast! And what is almost equally strange, though even the position of the ear-holes is mentioned,—such minute observation does Capt. Woodward seem to have made,—yet no description is given of any scales, or anything else, to account for what is before stated, that Capt. Woodward and his crew 'distinctly heard the ball and bullets strike against his body, from which they rebounded as though they had struck against a rock.'

Cooper adds that he is only looking for 'the truth, the whole truth, and nothing but the truth' and that he is personally convinced that there is a large sea-animal unknown to science. But there is no doubt that other readers drew the same conclusions as Cooper, and applied them to *all* the tales about sea-serpents.

Meanwhile, in Europe, other hoaxes had already preceded the affair of the *Adamant*. In the London *Literary Gazette* of 31 January 1818 we read:

> Letters from Marseilles state, that a sea monster, of enormous dimensions has been seen on the coast of Calabria. Some fishermen perceiving a fire in the sea, and thinking that it was a coasting vessel, which was in need of assistance, approached the monster, whose motions caused a phosphoric light, which was what they had taken for a fire. They soon perceived a thick smoke, heard a hollow bellowing mugient sound, and the boats were obliged to return precipitately to the shore. According to their account, the monster raised itself to a prodigious height, and then replunged into the waves; so that, though the night was very calm, they were covered with the spray. One would be almost inclined to think, that the great sea serpent, which was seen some time ago on the American coast, had crossed the Atlantic.

It is amusing to see how this fantastic tale of a modern leviathan of the Italian coast is attributed to a French source by their old enemies the English. But the French got their own back with a tale of a host of sea-serpents encountered by the British brig *Elephant*. It appeared in the *Censeur Européen* of 3 February 1820, where it was said to be taken from a Dunkirk newspaper. The incident was supposed to have occurred on 15 November 1819 and the account to be taken from a letter written by a seaman to a friend:

> Yesterday, about 5 o'clock in the morning, under shortened sail, our ship received a great shock: the men on watch thought that we had struck a rock or shoal. We were, however, more than 300 miles from land. At once everyone rushed on deck, and, as we sought the cause of our alarm, we saw in the light of the moon, several sea-monsters of dreadful size which were thrashing about

> around us. One of them was so near the ship, that it threw up such a strong wake that it broke on deck and knocked two men off their feet. At break of day we saw more than 20 of these monsters around us. We noticed one in particular which was more than 50 feet long. It advanced with fury towards the ship on the starboard side. A gunlayer, seizing the instant when it opened its mouth, aimed so well that the ball went straight in. The monster swam and expired, the noise of the cannon putting the others to flight. We then lowered the longboat and succeeded in towing the animal, which we recognized to be *a Sea-Serpent like those that have been so much talked about*; it was 100 feet long: we cut it up, and I have preserved the *tusks* to make you a present of them when I return to England.

I need hardly say that these tusks never found their way to the Natural History Museum.

After the excitement of the summer of 1817 a price was put on the monster's head in New England, then the centre of the whaling industry. In the following summer the sea-serpent was again in the news along this coast, and new hoaxes were mingled with genuine reports.

Much further south, off Cape Henry in Virginia, a 190-foot specimen was supposed to have been found on the surface by the captain of the brig *Wilson*, who first took it for a floating wreck and lowered a boat to examine it more closely. That the animal made no attempt either to swim away or to attack seems most suspicious. A few days later on 19 June a more likely sea-serpent appeared in Sag Harbor, a bay on the opposite end of Long Island from New York: new rewards were offered to any whaler who could catch it. Two days later it was off Cape Ann, where Captain Shubael West of the packet *Delia* saw—or claimed to see—what he thought was a sea-serpent fighting a big whale: it beat it loudly with its tail, which it raised some 30 feet out of the water each time in order to get a good swing. Was it a squid or a hoax? The second explanation is the safest. On the 27th, fishermen told of a sea-serpent coiled upon itself a league from Portland harbour, Maine, and on 2 July it was seen nearby by J. Webber and R. Hamilton. On 9 July it was off Massachusetts again that Captain Spark and the crew of the schooner *Mary* said they saw one swimming coolly among a school of eight to ten whales and whipping them with its tail like a cowboy driving his steers. I wonder. Then, on the 11th, a number of gentlemen saw one behaving more normally in Portland harbour itself.

On 22 July the sea-serpent reappeared in Gloucester harbour again. The next day it terrified a fisherman and two small boys by raising its head out of the water and staring at them, it seems, with big ox's eyes. On the 25th William Sargent counted thirty-two humps on the beast. Reports continue to increase until, on the 29th, a boat, loaded with fishermen armed with muskets, set out in pursuit of the monster. It received, with apparent unconcern, seven or eight salvos and went on playing on the surface. On the following day Captain Webber and several whalers managed to approach within 2 or 3 yards, but the harpoon bounced off the animal, which disappeared at once, making such a wash that the boat nearly capsized.

This time attacks upon the animal seem to have made it wary, for while many witnesses report it on the following day off Salem, twelve miles away, it was not seen off Gloucester again until 12 August near Squam Harbor. It was spotted there by Timothy Hodgkins, a sailor of fifty, who was returning by boat from Newburyport with two young men and Joseph Chase of Brunswick, New Hampshire. Hodgkins, who had not hitherto believed in the sea-serpent, was staggered to see that what he had first taken to be a school of pilot whales was actually the monster's humps. It made straight for the boat, and dived in an alarming fashion when it was 50 yards away. When it reappeared it was less than 10 yards away, and they could examine it carefully:

> His head was elevated from three to five feet; the distance was about six feet from his neck to the first bunch; we counted twenty bunches, and we supposed them on an average about five feet apart, and his whole length could not be less than one hundred and twenty feet ... His head was of a dark brown color, formed like a seal's, and shined with a glossy appearance ... His body was of the size of a sixty or eighty-gallon cask, his head as large as a barrel; for we could see it when he was about four miles from us. I believe he is perfectly harmless, and might easily be caught ... There was nothing that appeared like fins or gills. We did not discern his tail. There was a quick vibration of the parts we saw, which probably was his mode of swimming.

There are two important points to note in this admirably matter-of-fact description in which only the dimensions seem a little exaggerated: the head 'formed like a seal's'—rather than a snake's—and that the beast is 'perfectly harmless'.

On 16 August a large number of Gloucester people saw it near Squam lighthouse. This time a whole fleet of whaleboats, attracted by the reward, set out in pursuit. For several days they combed Massachusetts Bay.

One of the whalemen was Captain Richard Rich, who commanded a large whaleboat and two smaller ones, well manned. On 19 August the monster was reported off Squam jetty, so they went there and gave chase. This lasted about seven hours, the beast always keeping a safe distance, until it dived under the bow of Captain Rich's boat. The captain threw his harpoon, which went in for about 2 feet.

The sea-serpent went off as swiftly as a whale, taking 20 fathoms of line and towing the boat some way, but the harpoon soon came out.

The evidence of another whaleman who commanded one of the other boats was set down by his brother, Samuel Dexter, who had had a letter from him. He says that the beast 'has *no* scales on him, and no bunches on his back, but his skin is smooth, and looks similar to an eel'.

So far, even including the harpoon, the whalemen seem to be speaking the truth. But the plot soon thickened. Several days later the Boston *Daily Advertiser* announced that the expedition against the sea-serpent had been successful and had caught one. It was 120 feet long and had been brought into Gloucester harbour. Andrew Norton describes how he persuaded Professor Peck, despite his age and ill-health, to come to Gloucester. There they met Judge Davis who had a long face and told them that all that had been caught was a most extraordinary fish of very large size. They went to a wharf, where the sailors eventually brought ashore a common tunny of ordinary size.

It seems clear from Norton's letter that Rich's men, having caught a tunny, and not wanting to be ridiculed for coming back with no sea-serpent, foolishly tried to have a joke at the expense of the Boston journalists. But the joke misfired, and the outcome was that the sailors, instead of being accused of a hoax, were blamed for a mistake of quite incredible stupidity. They had thought they had harpooned a sea-serpent, but when they had got it aboard it had proved to be a tunny. Rather than be accused of a cheat, even Captain Rich eventually admitted to this version. For the sceptics the matter was settled, the sea-serpent was just a tunny—though no tunny could ever carry its head above the waves and show a row of humps. Few hoaxes have discredited the sea-serpent more than this, because here truth was so strangely mixed with fiction.

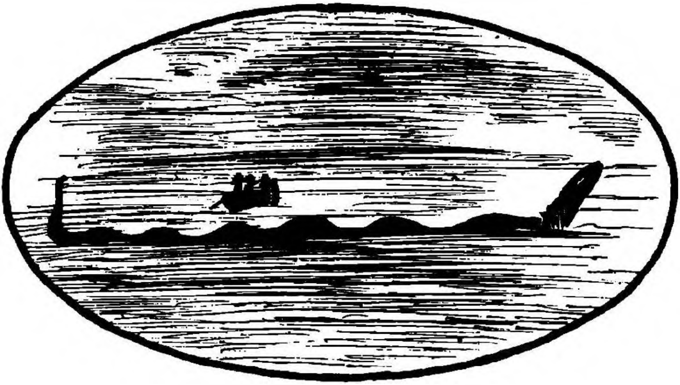
The following summer, in June 1819, another sea-serpent, a real one, quietly reappeared off Massachusetts. The description given by Captain Hawkins Wheeler, of the sloop *Concord*, and confirmed by the mate, Gersham Bennett, both of them on oath before Theodore Eames, Justice of the Peace, agrees most strikingly with that which was compiled by the Linnaean Society. The following passage is from the mate's sworn statement about the animal, which was less than 100 yards away and was reckoned to be about 60 feet long:

> His head was about as long as a horse's and was a proper snake's head—there was a degree of flatness, with a slight hollow on the top of his head—his eyes were prominent, and stood out considerably from the surface, resembling in that respect the eyes of a toad, and were nearer to the mouth of the animal than to the back of the head.

During that summer of 1819 the American sea-serpent was watched by a large number of people, many of them in a social position which ruled out any question of a hoax. First it was seen by some soldiers on guard at Fort

Independence. Then on 13 August it was seen by at least 200 people at once off the beach at Nahant near Lynn, Massachusetts. Among those present were the Hon. Amos Lawrence and James Prince, Marshal of the District,[1] who sent Judge Davis an excellent description, making an observation of great perspicacity:

> His head appeared about three feet out of the water; I counted thirteen bunches on his back: my family thought there were fifteen ... and ... judged he was fifty feet in length, and, at the extend, not more than sixty; whether, however, the wake might not add to his appearance of length; or whether the undulation of the water, or his peculiar manner of propelling himself, might not cause the appearance of protuberances, I leave for your better judgement.



34. James Prince's sea-serpent, 1819

It is quite true that in calm water any narrow fast boat (a dinghy with an outboard for instance) will leave a wake like a line of long humps moving at its own speed as if they were part of it. Any fast-moving animal breaking the surface only with its dorsal fin or with a narrow neck will make the same wake. And in those days, when there were no motors, a wake of this kind would be particularly striking. Nevertheless the careful observations made by professional seamen a few days later reduce this explanation to its proper proportions.

On 26 August 1819, the Rev. Cheever Felch, chaplain to the United States 74-gun ship *Independence* wrote to the Editor of the *Boston Centinel* giving a vivid description of the events of that morning.

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[1] Also present were: Prince's wife, children and coachman, Samuel Cabot and his wife and children, Daniel P. Parker, James Boott, Nathan D. Chase, Benjamin F. Newhall and John Marston.

The schooner *Science* was then surveying Gloucester harbour, and Felch was going down the harbour in the schooner's boat.

> When abreast of Dallivan's Neck, William T. Malbone, Esq. commander of the schooner, seeing some appearance on the water, said—'*there is your Sea-Serpent*,' meaning it is a laugh on me, for believing in its existence; but it proved to be no joke.
>
> The animal was then between thirty and forty yards distance from us. Mr. Malbone, Midshipman Blake, myself, and our four boatmen, had a distinct view of him. He soon sunk; but not so deep but we could trace his course. He rose again within twenty yards distance of us, and lay some time on the water. He then turned, and steered for Ten Pound Island; we pulled after him, but finding that he was not pleased with the noise of our oars, they were laid in, and the boat skulled. We again approached very near him. He continued some length of time, playing between Ten Pound Island and Stage Point.
>
> As he often came near the Point, we thought we could get a better view of him there, than from the boat, of which he seemed suspicious. Mr. Malbone and myself landed; and the boat was sent to order the schooner down, for the purpose of trying what effect a twelve pound carronade would have upon him.

What 'effect' the carronade could possibly have, except to frighten the beast away—or to kill him so that he sank as most sea-creatures do—I cannot think. Fortunately the experiment does not seem to have been tried out.

> He did not remain long after we landed, so that I was unable to effect my intention, of ascertaining, accurately, his length, with my instruments. From my knowledge of aquatic animals, and habits of intimacy with marine appearances, I could not be deceived. We had a good view of him, except the very short period while he was under water, for half an hour.—
>
> His colour is a dark brown, with white under the throat. His size, we could not accurately ascertain, but his head is about three feet in circumference, flat and much smaller than his body. We did not see his tail; but from the end of the head to the fartherest protuberance, was not far from one hundred feet. I speak with a degree of certainty, from being much accustomed to measure and estimate distances and length. I counted fourteen bunches on his back, the first one, say ten or twelve feet from his head, and the others about seven feet apart. They decreased in size towards the tail. These bunches were sometimes counted with, and sometimes without a glass. Mr. Malbone counted thirteen, Mr. Blake thirteen and fourteen, and the boatman about the same number.
>
> His motion was sometimes very rapid, and at other times he lay nearly still. He turned slowly, and took up considerable room in doing it. He sometimes darted under water, with the greatest velocity, as if seizing prey. The protuberances were not from his motion, as they were the same whether in slow or rapid movement. His motion was partly vertical and partly horizontal, like that of fresh water snakes.[1] I have been much acquainted with the snakes in our interior waters. His motion was the same.

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[1] In fact snakes can bend only very slightly in a vertical direction.

> I have given you in round numbers, one hundred feet, for his length, that is, what we saw; but I should say he must be one hundred and thirty feet in length, allowing for his tail. There were a considerable number of birds about the Sea Serpent as I have seen them about a Snake on shore. That there is an aquatic animal in the form of a Snake, is not to be doubted. Mr. Malbone, till this day, was incredulous. No man would now convince him, there was not such a being.

This episode was confirmed twenty-seven years later by Captain W. C. Bolton who had been Malbone's mate at the time.

Around the middle of September 1819 there was an interesting report from Massachusetts Bay. This time the sea-serpent had 'three yellow collars on the neck' about 2 inches broad and 1 foot apart. Some people thought that this meant that it was a different species, others that this feature must have been overlooked by previous observers. Dr Oudemans later suggested that these collars were folds in its fur which had dried in the sun. Personally I think they were just rolls of fat.

I don't really know what to make of the sea-serpent that is supposed to have attacked the schooner *Sally* near the coast of Long Island on 17 December. The only record of it seems to be an engraving (Plate 26), that is highly sensational, but does include an interesting detail: behind the monster's dreadful head, which is quite enormous and has all its fangs showing, is a pair of cherub's wings. If the drawing has any basis in fact it implies that the persons or persons who saw the beast said it had a pair of flippers or pectoral fins, which nobody else had noticed on the American sea-serpent. But the whole thing may be a total invention.

For ten years after 1817 the sea-serpent appeared every summer off the east coast of the United States, especially in Massachusetts Bay and thereabouts. It was seen by hundreds and hundreds of people from all walks of life. Some reports are certainly exaggerated and over-dramatized, some are complete inventions, but on the whole there is a most reassuring unanimity.

During August 1820 it was seen off Massachusetts: once at Nahant, from the terrace of Colonel T. H. Perkins's villa, once near Phillips Beach at Swampscott by four men from Lynn: Andrew Reynolds, Jonathan B. Lewis, Benjamin King and Joseph Ingalls, who were all working in the same workshop. When they saw the animal the first three men launched a rowing boat and got within 30 yards of it.

> He had a head about two feet long, and shaped somewhat like an egg, which he carried out of the water when he was moving. There were several protuberances on his back, the highest points of which appeared to be seven or eight inches above the level of the water. He was completely black.

The four men made affidavits of their evidence before a Justice of the Peace, John Prince, Jr. Their accounts agree about everything except the size. Reynolds said it was 50 or 60 feet long. King, who had counted as many as twenty-three protuberances visible at one time, thought it about 70 feet long, adding that as he was sitting in the stern he could see the beast better than the others who were rowing.

Ingalls, who remained on land, thought it only 20 feet long, but admitted that the others could judge its size better from closer to.

In the summer of 1821 the sea-serpent was seen again in Massachusetts: near the coast by Captain Bennett, at Nahant by Colonel Perkins's family, and near Nantucket Island by Francis Joy, a respectable merchant. On 2 August in the harbour of Portsmouth, New Hampshire, it was twice watched for a long time by Samuel Duncan, a Customs Inspector from Newcastle, his eighteen-year-old son and Jonathan Vennard, who were all in a whaler. The second time, another observer also watched the beast from another boat.

When the animal moved it showed five humps about 5 feet apart. It looked like five porpoises swimming exactly in line. But it is hard to imagine porpoises keeping such strict formation for an hour together.

The beast was seen almost every day at Nahant in the summer of 1822.

In July 1823 a sea-serpent about a hundred feet long was seen in Plymouth Bay by three men called Weston from Duxbury. And on 12 July it was once again porpoises that Francis Johnson, Jr, thought he was seeing in Lynn harbour.

> About two hours afterwards [he writes, however], I heard a noise in the water, and saw, about four rods distant, something resembling the head of a fish or serpent, elevated about two feet above the surface, followed by seven or eight bunches, the first about six feet from the head, all about six feet apart, and raised about six inches above the water. It stood eastwardly, at the rate of five miles an hour, with an undulating motion, like that of a caterpillar.

As we shall find in reading these reports, sea-serpents are much more often at first mistaken for a row of porpoises (or a tree-trunk) than the other way about. It is natural for the ordinary explanation to spring first to mind: but these mistakes—in either direction—do not survive careful examination.

In 1824 the sea-serpent paid Massachusetts its usual summer visit, and was seen off Plum Island by the whole Ruggles family, and at Little Boar's Head by two gentlemen from Plymouth.

It therefore seems quite odd to find no record of a visit to Massachusetts in the summer of 1825—though this does not mean the sea-serpent did not come. At all events it appeared in Nova Scotia some 400 miles away. On 15 July 1825 it was seen in Halifax harbour from three separate and independent positions: from a carriage by a young man and several young ladies, from a house by a farmer called Goreham and by his family and servants, and from a boat by William Barry and several companions. It held its head 3 feet out of the water, its body was as big as a large tree-trunk and seemed to be about 60 feet long. It moved in a sort of writhing. Barry counted eight coils above the water. No doubt they were really humps.

On 18 June 1826 the sea-serpent returned to its old haunts and was seen off Cape Cod by the whole of a ship's crew. In 1827 it was met between Nantucket Island and Connecticut by Captain Coleman of the sloop *Levant*. Finally Captain David Thurlo, Jr, of the schooner *Lydia* claimed to have harpooned one six leagues from Mount Desert Rock off the coast of Maine.

Captain Thurlo said he had left the ship in a boat to fish for mackerel when a sea-serpent surfaced close by. As he had a harpoon in the boat he made for the monster and succeeded in hitting it. The serpent made off at top speed towing the boat behind it, but soon stopped short, raising its head, which was just like a shark's, some 6 feet out of the water. When it moved off the line broke and it disappeared with the harpoon still in its body.

When the captain began fishing once more, another sea-serpent again surfaced nearby, and when he started rowing back to the schooner, anchored some three miles away, the monster followed him at a respectful distance all the way. Thurlo said the two animals were 65 to 80 feet long, dark in colour and with large scales. These scales, together with the shark's head, agree so little with the usual descriptions that they hardly help to authenticate a tale that is suspect enough without them.

Apart from such rare exceptions as Thurlo's, the mass of reports from the east coast of the United States agree so well as to be almost monotonous. 'To us it seems a matter of surprise, that any person who has examined the testimony, can doubt the existence of the Sea-serpent,' wrote Professor Benjamin Silliman (a more distinguished American geologist and chemist than his unfortunate name might imply) in 1827. The great botanist William J. Hooker took the same line in the *Edinburgh Journal of Science*, and I have already quoted him on page 24.

But the man-in-the-street, who had not examined the testimony, and had been disillusioned by various hoaxes and the failure to catch the beast, preferred to disbelieve the whole thing. There were constant jokes at the expense of those who had seen it. John G. C. Brainard, a New England bard, wrote an ode to the sea-serpent, with such satiric couplets as:

> But go not to Nahant, lest men should swear
> You are a great deal bigger than you are.

Professor Samuel Latham Mitchill gave a lecture in New York on 'The

History of Sea-Serpentism' in October 1828. With much heavy irony he told of serpents in the Great Lakes that had proved to be ducklings or tree-trunks. He related the hoaxes we have already mentioned, but passed over in silence all the reports that argued for the beast's existence, concluding disingenuously:

> Now, after all these mistakes, deceptions and wilful perversions on the subject, every person of consideration may admit that the gambols of porpoises, the slow motions of basking sharks, and the yet different appearances of balaenopterous whales, all of which have fins on their backs, may have given rise to those parts of the narrations, not already herein commented upon.

Mitchill's state of mind was spreading. As time passed it became harder to tell the true reports from the false. After the sea-serpent had been turning up regularly every summer for ten years so many careful and detailed descriptions had been published that an intelligent and well-informed journalist could easily invent an encounter with a sea-serpent which was not only dramatic but plausible. Fortunately intelligent and well-informed journalists usually have something better to do.

What are we to make of the adventure which befell Captain Deland of the schooner *Eagle* on 23 March 1830, and about which many different views have been expressed? When the captain arrived at Charleston in South Carolina he said that at 11 o'clock that very morning he had seen a big animal like an alligator a mile from Simon's Bay. It was swimming on the surface some 300 yards from the ship. The captain sailed up to within 20 to 25 yards. When the beast was quite still he carefully aimed his musket at the back of its head and fired. The bullet hit it, for the monster immediately dived under the ship and, to the consternation of the crew, struck it hard two or three times with its tail in passing. One blow struck the stem and was felt by everybody on board.

> They all had opportunity [said the newspapers] to see their enemy and agree that its length was about 70 feet. The body was as thick as or thicker than a sixty-gallon keg, of a grey colour, eel-shaped, without visible fins and apparently covered with scales, the back full of joints or bunches, the head and beak resembled an alligator's, the former 10 feet long, and as big as a hogshead.

A smaller specimen was also seen, or so they said, further off. It disappeared when the musket was fired, but the two animals were seen together later. Captain Deland added that the monster was strong enough to damage a ship the size of the *Eagle*, if not to wreck her, and he was glad that he had come out of the encounter no worse.

The German doctor and naturalist, Ludwig Friedrich von Froriep, reprinted this tale without reservations in his *Notizen aus dem Gebiete der*

Natur- und Heilkunde, a respected scientific journal which made a point of reporting accounts of sea-serpents. But others have been completely sceptical.

Like all accounts of sea-serpents being unaffected by gunfire, this has seemed suspect to some. But this is not justified, for there are many animals which suffer no immediate harm from bullets of ordinary calibre. Quite apart from the land pachyderms, like the elephant and rhinoceros, whose vulnerable areas are very limited, there are water-beasts like crocodiles, off whose hide bullets sometimes ricochet when they hit a superficial bone, and this would have been commoner in the days of muskets. The same would probably be true of many prehistoric reptiles, could the experiment be tried. Some fish are as well protected, and Whitley, the Australian ichthyologist, mentions the capture of a sunfish (*Mola mola*) whose skin was impervious to the bullets of a Winchester carbine.

Dr Oudemans takes a different line. 'I consider the whole account as a story,' he wrote, 'because it is not the habit of the sea-serpent to attack a ship after having been struck by a ball, but to plunge down and disappear.' It is true that many zoological works say that an animal's habit is to act in a certain way in certain circumstances. But an animal is not a machine, and may act in quite different ways in apparently identical circumstances. The *Eagle*'s sea-serpent's behaviour might have been due to there being a young one nearby. And did it really act so strangely? It might have merely dived (as usual) and only hit the ship by accident.

In point of fact Dr Oudemans's doubts seem to be really due much more to the description of the animal, which hardly agrees with the usual smooth and blackish beast with a fairly short head. But there is no reason why *all* the big unknown sea-animals should be anatomically similar or even be related. In any case Captain Deland's alligator-headed monster differs from the New England sea-serpents in that, while they have appeared only from May to October, it did so in March and was 700 miles further south.[1] Moreover this is not the first nor the last time that a sea-serpent has been compared to a huge crocodile. Pontoppidan said that the peasants at Sundmör caught a 'snake with legs' 20 feet long, which he thought was like a crocodile, and we shall later come to other more indisputable reports of the same kind. So we had better give Captain Deland the benefit of the doubt.

Meanwhile the North American sea-serpent, always serpentine, dark in colour, with its head raised out of the water, undulating up and down and showing a string of humps close together, went on appearing as usual. In 1830 three fishermen, one called Gooch, saw it near Kennebec in Maine. In 1831 it was seen not far away in Boothbay harbour by Captain Walden and the crew of the revenue cutter *Detector*, who said it was about 100 feet long. That same year it was seen by some ten people off Boar's Head at Hampton Beach, a favourite spot on Long Island for outings from New York. This time it was reckoned to be 150 feet long, and some thirty to forty little humps, each a foot long, were counted on its back. They also saw something like a horn or a fin near the head. This was quite new, but was to be noticed again later.

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[1] This difference in American sea-serpents according to latitude was confirmed in February 1846 when Captain Lawson saw one between Capes Charles and Henry in Virginia. It had a small head, and 'sharp projections' on the back.

Whatever libels the European journalists might spread about Yankee exaggeration and credulity, the sea-serpent was seen by others besides United States citizens. There was the appearance at Halifax in Nova Scotia in 1825, and in 1833 it was seen by a captain and two lieutenants, an ensign and an Ordnance storekeeper at Mahone Bay, forty miles to the west of Halifax on 15 May. They were enjoying themselves on deck on their way to the fishing grounds, when they saw a big shoal of grampuses, and while they were watching a seaman shouted, 'Oh! Sirs, look here!' and they

> saw an object which banished all other thoughts save wonder and surprise.
>
> At the distance of from 150 to 200 yards on our starboard bow, we saw the head and neck of some denizen of the deep, precisely like those of a common snake, in the act of swimming, the head so far elevated and thrown forward by the curve of the neck as to enable us to see the water under and beyond it. The creature rapidly passed, leaving a regular wake, from the commencement of which, to the forepart, which was out of water, we judged its length to be about eighty feet; and this within rather than beyond the mark ...
>
> It is most difficult to give correctly the dimensions of any object in the water. The head of the creature we set down at about six feet in length, and the portion of the neck which we saw, at the same; the extreme length, as before stated, at between eighty and one hundred feet. The neck in thickness equalled the bole of a moderate-sized tree. The head and neck of a dark brown or nearly black colour, streaked with white in irregular streaks.

The five principal witnesses signed with their names, ranks, and dates at which they received their commissions, thus:

W. SULLIVAN, Captain, Rifle Brigade, June 21, 1831.
A. MACLACHLAN, Lieutenant, ditto, August 5, 1824.
G. P. MALCOLM, Ensign, ditto, August 13, 1830.
B. O'NEAL LYSTER, Lieut. Artillery, June 7, 1816.
HENRY INCE, Ordnance Storekeeper at Halifax.

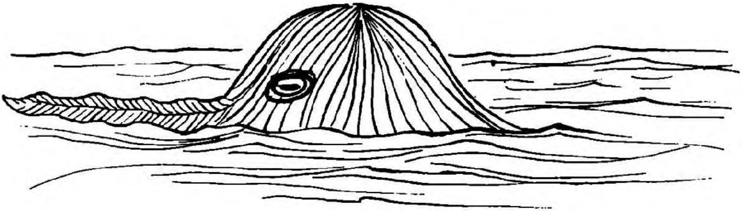
In their deposition they state categorically:

> There could be no mistake, no delusion, and we were all perfectly satisfied that we had been favoured with a view of the 'true and veritable sea-serpent,' which had been generally considered to have existed only in the brain of some Yankee skipper, and treated as a tale not much entitled to belief.

In 1833, 1834 and 1835 the same kind of sea-serpent appeared as usual at Nahant, Lynn, Castine and other places off the coast of Massachusetts and Maine, being seen by large numbers of people—as many as forty or fifty at a time—and by the whole crew of a fishing schooner.

In March or April 1835 Massachusetts received a visit that seems to me quite out of the ordinary. When Captain Shibbles of the brig *Mangehan* of Thomastown arrived at Gloucester at this time he said that he had seen what he and his crew thought was the sea-serpent some ten miles from Race Point light. He examined the beast through the glass and saw that the head was as big as a barrel and raised 7 or 8 feet above the water. He noticed the eyes, which was not usual with American sea-serpents, and that 'the neck had something that looked like a mane upon the top of it'. One of the sailors said that he had seen a similar animal in Gloucester Bay the year before.

Now the reader may recall that both Olaus Magnus and Pontoppidan said that the Norwegian sea-serpent had a mane, yet the captain of the *Mangehan* is the first person to notice one in American waters. There are other interesting features of this unusual sea-serpent. For instance, 'his head, neck and tail and his motion in the water, was exactly like those of a snake'. This implies that Captain Shibbles saw the beast's tail out of the water which no other trustworthy American observer had done. Finally he says that every time it lifted its head out of the water it 'made a noise similar to that of steam escaping from the boiler of a steam-boat'.



35. *Robertson* sea-monster, 1834, after Captain Neill

At first sight this unusual maned sea-serpent, appearing too early in the season, seems as suspect as the *Eagle*'s alligator-headed monster. But we shall find that there were soon to be further accidental occurrences of what had hitherto been thought to be a specifically Norwegian type of sea-serpent. And at this time *anything* odd that appeared off the east coast of America was thought to be a sea-serpent, even if it was not really in the least serpentine.

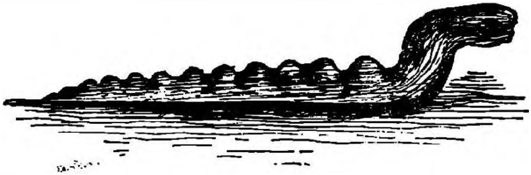
What on earth are we to make of the sea-monster which Captain Neill of the *Robertson* of Greenock saw not far south of Newfoundland on 22

June 1834, and which Dr Hamilton has so unfortunately included in the sea-serpent's dossier? When first they saw a sort of dome the Scottish seamen thought it was the hull of a boat on her beam ends, but when it made off at 8 knots they realized that it was alive and was the head and snout of a big fish.

> Immediately above the water its eye was seen like a large deep hole. That part of the head which was above the water measured about twelve feet [? high], and its breadth or width twenty-five feet. The snout or trunk was about fifty feet long, and the sea occasionally rippled over one part, leaving other parts quite dry and uncovered. The colour of the parts seen was green, with a light and dark shade; and the skin was ribbed, as represented in the sketch ... [Fig. 35.]

The drawing unfortunately does little to clarify the far from lucid text. This creature has been explained as a giant octopus—but octopuses cannot swim like this on the surface, and squids never have such rounded heads. Personally I think the most likely explanation is that it is the ridged throat, swollen through sickness, of a rorqual (or fin-whale) which has been forced by this ailment to swim on its back and eventually suffocate. The supposed 'snout' is merely the tapering body, and its 'eye' is either a natural orifice or an open wound and the cause of the whale's condition (see Plate 36).

Meanwhile other non-American witnesses, besides the soldiers in Canada, had been seeing more usual sea-serpents. Mr William Warburton, of Barclay Bros & Co. of London, was travelling on the New York packet, *Silas Richards*, Captain Henry Holdredge, when he was able to watch a sea-serpent 50 yards away on 16 June 1826 off George's Bank south of Newfoundland. He wrote a letter about it to his director, Robert Barclay, who communicated it to Dr Hooker. 'The humps on the back,' he said, 'resembled in size and shape those of a dromedary'. As a dromedary has but one, he probably had the Bactrian camel in mind, but no matter, since his meaning is clearly explained by his naïve, though extremely helpful, sketch.



36. The *Silas Richards* sea-serpent, 1826, after William Warburton

One day at dinner Mr Warburton mentioned his encounter to an old British admiral, Sir Isaac Coffin, Bart, who firmly denied that the American sea-serpent existed. 'But,' adds Warburton, 'as I assured him I had never heard previously even the report of such a monster, and that I was an *Englishman*, he gave full credit to it'.

Such were the national prejudices about the sea-serpent. And yet, in August 1839, the British consul in Massachusetts, Thomas Colley Grattan, saw one two days running from the terrace of his hotel. The description which he gives of it in his book *Civilized America* (a title aimed at Sir Isaac and his like?) is rather vague, and adds nothing new, but is worth recording because of Grattan's position and because 'above a hundred persons' saw it at the same time.[1]

> One of the spectators, [says Grattan] Dr Amos Binney, a gentleman of scientific attainments, drew up a minute account of it, which is deposited in the archives of one of the Philosophical Societies of Boston.

Among other non-American witnesses of the American period were Cuban and French sailors, Captain José-Maria Lopez and the crew of the *Neptune*, and Captain d'Abnour and the men of the *Ville de Rochefort*. Their reports are also interesting because of their locality. So far all the sea-serpents met with on the east coast of North America have been between Newfoundland and New York, except for one exceptional and somewhat doubtful case off South Carolina. Now suddenly several reports come from the Gulf of Mexico some 600 miles even further south.

On the morning of 3 January 1830 the *Neptune* left Matanzas along the north coast of Cuba bound for Havana. At midday her crew thought they saw a ship aground on a reef, but when they came closer everybody, from Captain Lopez to the passengers, saw that it was a 'monster of dreadful proportions'.

> It was 15 or 20 feet out of the water in an almost horizontal position, and it was surrounded by an innumerable quantity of fish of various sizes, which swam in all directions, occupying a space of almost a mile around it. As we came nearer to this huge cetacean we saw it move its jaws, and a terrible noise like that made by a landslide was heard. A black fin, nearly 9 feet high and placed 60 feet from its mouth, slowly appeared. We could not judge the total length of this monster, as the tail did not appear above the surface of the water.

Why, one wonders, did Count Georges Gautron include this in his *Rapport sur les preuves de l'existence du grand Serpent-de-mer* in 1905, since the beast is specifically called a cetacean and its description is that of a dying whale? The only puzzle is how it raised itself so high out of the water; perhaps it really was aground. And the fin was probably the caudal and not the dorsal, since the latter is never large in the big whales. Certainly it did not look in the least like a sea-serpent.

Captain d'Abnour's report is little better than Captain Lopez's. On 21 April

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[1] In 1839 sea-serpents were also seen by Lieutenant Bubier, U.S.N., near Boston, and by an old whaleman, Captain Smith, near Kennebec, Maine. There were other vague reports all along the east coast in 1840.

1840 the *Ville de Rochefort* was in the middle of the Gulf of Mexico when the men on board saw something like a

> long chain of enormous rings, resembling a number of barrels linked together, and in form very like the back of a silkworm ... As the ship approached ... we presently saw the extremity of an enormous tail, longitudinally divided into two sections, white and black. This tail appeared to wind itself up, and repose on a part of the object itself. Then, at the other extremity, we saw a membrane rising to the height of about two metres from the water, and inclining itself at a considerable angle upon the mass (without leaving it, however): and this led me to conjecture that the monster before us was provided with an apparatus for the purpose of respiration, like the lampreys. At last we perceived something like an antenna rising from the water, to the great height of nearly eight metres, terminated by a crescent at least five metres from one extremity to the other.

Captain d'Abnour was clearly ambitious of writing scientific literature at its most pompous, but unfortunately he does not seem to have much idea of what a membrane or an antenna is. Lampreys do not have 'membranes' that can be raised like a flag. Perhaps it was merely a fin. The 'antenna' and 'crescent' could have been a big whale's tail, and the other tail which they saw 'wind itself up' could have been the tentacle of a giant squid attacking the whale.

For a less confused report from the Gulf of Mexico we must turn to one of those Americans about whom the rest of the world were so sceptical. On 14 July 1841 John Lloyd Stephens, the great American archaeologist who first discovered the Maya monuments in Yucatan, was in those waters:

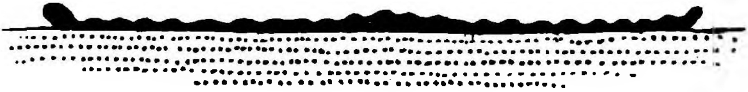
> Towards evening we saw an enormous monster with a straight black head, 10 feet out of the water, moving directly towards our ship. The Captain said it was not a whale. Another of the same kind appeared at the stern and we were really nervous; but were relieved by hearing them spout and seeing a column of water thrown into the air—at dark they were lying huge and motionless on the surface of the water.

This brief description does not tell us much, except that the author clearly neither invented nor embroidered it. No known animal *normally* swims with a 'straight black head, 10 feet out of the water'. But a sperm-whale *could* do so. There is certainly not enough data to identify these spouting monsters with the New England sea-serpent, which continued to visit its old haunts. There is still no reason to think that its area of distribution includes the tropics.

Further reports of this period from Canada are particularly important because they were collected by Sir Charles Lyell who, by exploding the old theory of the cataclysmic origin of the relief of the globe, had as revolutionary effect on geology as Darwin had on biology.

In his book, *A Second Visit to the United States of America* he remarks that 'when I left America in 1846 ... I believed in the sea-serpent without having seen it,' and tells how his friend, the geologist J. W. Dawson, with whom he had previously explored Nova Scotia, collected evidence for him about a marine monster which appeared at Merigomish on the northern coast of that peninsula. It was 'about 100 feet long, seen by two intelligent observers nearly aground in calm water, within 200 feet of the beach, where it remained in sight about half an hour, and then got off with difficulty'.

> One of the witnesses went up a bank in order to look down upon it. They said it sometimes raised its head (which resembled that of a seal) partially out of the water. Along its back were a number of humps or protuberances, which, in the opinion of the observer on the beach, were true humps, while the other thought they were produced by vertical flexures of the body. Between the head and the first protuberance there was a straight part of the back of considerable length, and this part was generally above water. The colour appeared black, and the skin had a rough appearance.
>
> The animal was seen to bend its body almost into a circle, and again to unbend it with rapidity. It was slender in proportion to its length. After it had disappeared in deep water, its wake was visible for some time. There were no indications of paddles seen. Some other persons who saw it, compared the creature to a long string of fishing-net buoys moving rapidly about.
>
> In the course of the summer, the fishermen on the eastern shore of Prince Edward's Island, in the Gulf of St. Lawrence, had been terrified by this sea monster, and the year before, October, 1844, a similar creature swam slowly past the pier at Arisaig, near the east end of Nova Scotia, and, there being only a slight breeze at the time, was attentively observed by Mr. Barry, a millwright of Pictou, who told Mr. Dawson he was within 120 feet of it, and estimated its length at sixty feet, and the thickness of its body at three feet. It had humps on the back, which seemed too small and close together to be bends of the body.
>
> The body appeared also to move in *long undulations*, including many of the smaller humps. In consequence of this motion, the head and tail were sometimes both out of sight, and sometimes both above water, as represented in the annexed outline, given from memory.
>
> The head ... was rounded and obtuse in front, and was never elevated more



37. Mr Barry's sea-serpent, 1844, after Sir Charles Lyell

> than a foot above the surface. The tail was pointed, appearing like half of a mackerel's tail. The colour of the part seen was black.
>
> It was suggested to Mr. Dawson that a swell in the sea might give the deceptive appearance of an undulating movement, as it is well known 'that a stick held horizontally at the surface of water when there is a ripple seems to have an uneven outline'. But Mr. Barry replied that he observed the animal very attentively, having read accounts of the sea serpent, and feels confident that the undulations were not those of the water.

Here at last is an unequivocal indication of the shape and movements of the North American sea-serpent. It should have combined once and for all the theories of humps on the back and undulations of the body, which in point of fact do not contradict, but complement, one another. The appearance of humps or of numbers of coils may thus be produced by a body largely covered with little humps or folds of fat and undulating gently up and down. Once more I may mention that among the vertebrates only the mammals and birds undulate in this way.

A further Canadian report was added by a Nova Scotian naturalist, the Rev. John Ambrose, in 1864. He tells how in the summer of 1846 James Wilson, a schoolmaster, and James Boehner were on board a schooner near the western shore of St Margaret's Bay when they saw what at first they thought were the floats of a long net. But they were astonished to see them begin to move at such a speed that they made a wake as big as the schooner's.

> They now perceived the object to be a large Serpent, [wrote Ambrose] with a head about the size of a barrel, and a body in proportion, and with something like a mane flowing down its neck. It carried its head erect, with a slight inclination forward.
>
> A fisherman belonging to Mill Cove, now came rowing with all his fast decreasing strength, to the schooner, and having barely leaped in over the side, fainted with terror on the deck.
>
> Wilson thinks the animal was from about seventy to one hundred feet in length. Its colour seemed to be a sort of steel-gray.

George Dauphiney of Boutilier's Point also saw this serpent, or one like it, near Hackett's Cove in the same bay, but he was in too much of a hurry to get out of the way of such an alarming beast to examine it closely.

Wilson and Boehner's report is a further indication that the sea-serpent with a floating mane may perhaps be found on the Atlantic coast of North America.

Although a few more details have still to be added, the picture we now have of the American sea-serpent, confused though it is by the presence of at least two types of animal, is now clear enough for us to draw some useful conclusions about its identity.

At this time most of the scientists who believed in it insisted, against all the evidence, that it was a snake. For a long time no one had suspected that it had limbs, even though its sudden plunges should have shown that fins were essential. It seemed inconceivable that a serpent could have legs. Thus Pontoppidan had deliberately excluded from his account of the sea-serpent both Hans Egede's sea-monster with its big flippers and the serpent-with-legs seen by the Sundmör peasants, because 'this must somewhat resemble a crocodile'. This was the only kind of serpent-with-legs he could imagine.

The reader who knows what a plesiosaur looks like—or recalls Dean Buckland's phrase, 'a snake threaded through a turtle's shell'—may be surprised that no one had yet suggested that the sea-serpent might be this marine reptile. But in point of fact our knowledge of the great marine saurians of the Mesozoic Era is relatively recent.

The first to be discovered was the mosasaur which was disinterred near Maastricht in 1780 but not described by Cuvier until 1808. This animal was no different in shape from our modern lizards, but this was far from true of the ichthyosaur and plesiosaur (see Plates 28 and 29) which were described in 1821 and 1823. Even Cuvier became quite excited about them and said:

> We have now reached those of all the reptiles and perhaps of all the animals which least resemble those we know and are most designed to astonish the naturalist by their combinations of structures which without the slightest doubt would seem incredible to anyone who had not been able to observe them himself. In the genus *Ichthyosaurus*, a dolphin's beak, a crocodile's teeth, the head and breastbone of a lizard, a whale's flippers—but four of them—and a fish's vertebrae; in the genus *Plesiosaurus*, with the same whale's flippers, a lizard's head, and a long neck like a snake's ... The *Plesiosaurus* is perhaps the strangest of the inhabitants of the ancient world and the one which seems most to deserve the name of monster.

After the sea-serpent had appeared regularly off the American coast for a dozen years or more a few bold naturalists did begin to wonder whether it might not be some survivor from a vanished age.

Thus in 1833 Robert Bakewell, the English geologist, suggested in the much enlarged fourth edition of his *Introduction to Geology* that the sea-serpent might be related to the fossil ichthyosaur.

> I remember one of the most particular descriptions of the sea serpent was given by an American captain, who saw the animal raise a large portion of its body from the water: he reported it as of great length, and about the bulk of a large water cask; it had paddles somewhat like a turtle, and enormous jaws like a crocodile.[1] This description certainly approaches to, or may be said to correspond with, the ichthyosaurus, of which the captain had probably never heard.

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[1] I have not been able to discover the report Bakewell refers to. So far as I know no American had yet seen 'paddles somewhat like a turtle' on a sea-serpent—unless we include the cherub's wings on the very suspect monster that attacked the *Sally*.

Bakewell may be right about the unknown animal seen by his unknown sea-captain. But the ichthyosaur has nothing in common with the usual North American sea-serpent. Its name means 'fish-lizard', though 'dolphin-lizard' would be a better description, for it is a dolphin that by a phenomenon of convergence it most resembles. Like a dolphin this marine reptile of the Triassic and Jurassic Periods had no visible neck, a long snout full of conical teeth, a pair of lobed pectoral fins and a triangular dorsal fin. It differed, however, in having a second pair of fins and—as one might expect in a reptile which undulates from side to side—a tail flattened in the vertical and not in the horizontal plane. Otherwise it was very like a dolphin, not only in its diet of fish and squids, but also in being viviparous. For in its fossil remains the impression has sometimes been found in the lizard's belly of half a dozen little ichthyosaurs, the last one always with its head pointing towards its mother's tail ready for birth, which shows that they are fully grown foetuses and not embryos in eggs. The size of adult ichthyosaurs varies between 3 and 30 feet according to the species.

Professor Benjamin Silliman, who realized that the ichthyosaur had nothing to do with the sea-serpent, for he was very well informed about the fossil giant reptiles, and in 1820 had been the first to learn of the discovery in Connecticut of the first remains of dinosaurs, added a note to the American edition of Bakewell's book:

> Mr. Bakewell's very sensible conjecture that the sea-serpent may be a Saurian, agrees still more with the supposition, that it is a Plesiosaurus, than an Ichthyosaurus, as the short neck of the latter does not agree with the common appearance of the sea-serpent.

A few years later, in 1841, the great German zoologist Heinrich Rathke came to the same conclusion after he had collected reports of the sea-serpent in Norway. He suggests the reason his plesiosaur sea-serpent is not seen more often:

> It is possible and probable that when it stretches out its long neck it usually sticks only the tip of its nose out of the water, and then only for a very short time, keeping the rest of its body under water, which cannot make it easy to see among the movement of the waves.

When Edward Newman quoted Rathke's opinion in the *Zoologist* in 1847, he himself suggested on the cover of the journal that the sea-serpent might be an enaliosaurian—one of the group which then included all the marine reptiles. And in the next issue Dr Charles Cogswell wrote 'A Plea for the North Atlantic Sea-Serpent' arguing that the beast was related to the plesisaur.

I shall discuss this theory more fully in the next chapter, for it is still the most popular among naturalists who accept the sea-serpent.

Yet certain features of the various sea-serpents—their up-and-down undulation, their habit of blowing like whales, their smooth skin, and the manes on some of them—seem to show that they must be mammals. Perhaps we shall find one day that the person who was then nearest to the truth was the perpetrator of a shameless fraud.

Broadway, even in 1845, was the heart of New York, and it was in the Apollo Saloon on that great highway that Dr Albert Carl Koch put on show the fantastic skeleton of what he pompously called *Hydrargos sillimanii,* or Silliman's Master-of-the-seas. It had been named after Silliman because he had recognized the existence of the sea-serpent in 1827, and it was supposed to be an extinct reptile the bones of which had been dug up in Alabama, and which was clearly related to the monster that still lived in the sea.

There was no doubt that the serpentine skeleton, 114 feet long, with its long head and formidable jaws, a series of ribs forming a very long ovoid body and vestiges of a pair of flippers, was startlingly like most witnesses' descriptions of the sea-serpent. To complete the likeness Dr Koch had carefully mounted the skeleton in an undulating shape and raised the head into the position usually adopted by the monster (see Plate 27).

It was too good to be true. Unfortunately for Dr Koch, among the sightseers who paid 25 cents to see the monster was a skilled anatomist, Professor Jeffries Wyman, who two years later was to publish the first scientific description of that other monster hitherto thought to be mythical, the gorilla. Wyman had no difficulty in showing that the so-called reptile must be a mammal, since its teeth had double roots, and, what was worse, that the bones came from several different skeletons and had been cunningly made into one. As Koch claimed to have found the bones in position, with the spine forming a single chain, Wyman's disclosure proved that he was not an incompetent palaeontologist but a cunning faker. Wyman was able to show that the beasts which had gone to make the Master-of-the-seas were fossil cetaceans of the genus *Zeuglodon*, which were only 45 feet long. Koch had indeed found the bones in Alabama; for this is the usual place to discover zeuglodon bones dating from the end of the Tertiary Era. Nor was he the only person to think they belonged to a reptile.

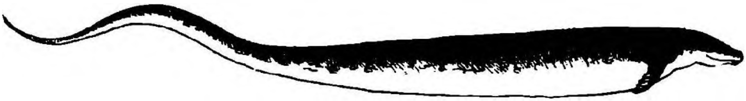
In 1832 Dr Richard Harlan, a reputable zoologist, examined a huge vertebra weighing over 40 pounds. He thought this came from a new genus of saurian which he called *Basilosaurus*. Further bones were discovered in Alabama, where the Negro slaves thought they belonged to fallen angels. Not until Sir Richard Owen examined them in 1839 was it shown that they came from a mammal, since the teeth had double roots, and that they were very primitive cetaceans, for which Owen created a new genus *Zeuglodon* (or 'yoked-teeth').

When Professor Silliman heard of the imposture, and refused to have his name attached to it, Koch was quite unabashed and merely changed the name of his fake fossil, correcting the spelling and giving the honours to Dr Harlan, to *Hydrarchos harlani*.

Koch's skeleton was still going strong in 1848 when the *Illustrated London News* referred to it, unaware that it was a fraud. Gideon Mantell, the geologist and palaeontologist, hastened to disabuse the editor:

> Mr Koch [he wrote] is the person who, a few years ago, had a fine collection of fossil bones of elephants and mastodons, out of which he made up an enormous skeleton, and exhibited it in the Egyptian Hall, Piccadilly, under the name of *Missourium*. This collection was purchased by the trustees of the British Museum, and from it were selected the bones which now constitute the matchless skeleton of a mastodon in our National Gallery of Organic Remains.

All the same Dr Koch was not a mere charlatan, for he was the first to show, by excavating worked flint arrow-heads embedded in the bones of mastodons and giant sloths, that man had lived in North America for thousands of years and had not arrived only a few centuries before Columbus, as was generally believed at that time. It seems as if Dr Koch was one of those men who, despairing of ever convincing the learned world of the importance of his true evidence, succumbed to the temptation of producing false.



38. Early reconstruction of the zeuglodon, after Oudemans

Koch's fraud was naturally the subject of jests in scientific journals in America and Europe. It was exposed in Froriep's *Neue Notizen* in February 1846. The following June a contributor, who must therefore have known what the *Hydrarchos* really was, wrote somewhat cryptically, 'Is the sea-serpent perhaps identical with the *Hydrarchus*, viz. a still living species, a still present remainder, though in a few individuals, of former periods?' Dr Oudemans thinks this must mean, 'Are there perhaps still living *Basilosauri* [i.e. zeuglodons], and is the sea-serpent perhaps one of these creatures?' He has also shown that the author of this query, 'M.J.S.', must have been the great botanist Matthias Jakob Schleiden—an ex-lawyer, which may explain the obscurity of his remarks.

Might not the zeuglodon (not to give it the too reptilian name of *Basilsaurus*, which, alas, the law of priority demands) make a very satisfactory sea-serpent? Some species of zeuglodon were more than 60 feet long. They were exceptionally slender animals and much more serpentine than the cetaceans of today. Instead of a tail spreading sideways in flukes, they had a long tapering one ending in a point—or so it was thought at this time. Like the other cetaceans they have only the front limbs, in the form of flippers, but they were more flexible, for the upper part of the arm was not so atrophied, and the fingers were still separate and probably had claws. Their skeletons also reveal that, unlike our whales and dolphins, they did not have vents on the top of the head, but nostrils in the usual place at the end of the snout. They had even longer heads than dolphins, and teeth divided into incisors, canines and molars, the latter being jagged cutting teeth like those of many seals. The long cervical vertebrae, articulated like a seal's, enabled them to turn their heads freely on a neck, which, though relatively short, was loose and flexible.

There is one big snag to the zeuglodon theory. It cannot explain those sea-serpents which have heads and necks like an umbrella-handle or a periscope, for the zeuglodon's neck is much too short. But 'that most dreadful Monster' seen by Hans Egede is a very different matter. One could hardly wish for a better reconstruction of a zeuglodon than Bing's drawing. The general shape, the long head with nostrils on the nose, the whale's breath, the flexible neck, the long tapering tail, the single pair of flippers—it all agrees. Yet Bing drew his picture a hundred years before the first fossil zeuglodon bones had been discovered or anyone could possibly guess that such an animal might exist.

It would not be surprising if zeuglodons were to survive, for some species are known to have existed in the Miocene Period, some thirty million years ago—which is not long compared to the sixty or seventy million years which the coelacanth survived unnoticed by naturalists and palaeontologists. The theory is so attractive that we shall find it cropping up several times after 1880—even to explain the giraffe-necked sea-serpent. But Schleiden had first mentioned it in such an elliptic and obscure fashion that it is not odd nobody took any immediate notice of him.

When, in 1848, the sea-serpent, which had been falling into some disrepute as a result of hoaxes and hasty scientific pronouncements, was watched for a good twenty minutes by the officers and men of H.M.S. *Daedalus*, the monster was taken more seriously in Europe, and reports about it were collected and compared. It was found that it had been seen a very large number of times in the previous thirty years—more than 100 times to my knowledge—and this includes only those occasions which were reported. There must have been many more, especially in the East, which did not come to light. It had appeared nearly seventy times between Newfoundland

and Cape Hatteras, but it had not abandoned its old haunts and had been seen half as often in the Norwegian fiords.

This rich Scandinavian harvest was reaped as a result of two inquiries undertaken twenty years apart by an English traveller, Sir Arthur de Capell Brooke, and a German zoologist, Heinrich Rathke, as well as the regular publication of new reports in the *Notizen* by Ludwig von Froriep, and after 1847 by his son Robert who succeeded him.

In *Travels through Sweden, Norway and Finmark during the Summer of 1820*, published three years later, Brooke reports some ten summer appearances of the sea-serpent off the Norwegian coast, apparently between 1818 and 1822.[1] One of them lasted almost as long as that in 1817 in Gloucester harbour on the other side of the Atlantic: throughout the whole of July 1819, during a particularly hot summer, a sea-serpent in large coils was watched at leisure by Captain Schilderup and the whole population of the little islands of Ottersum and Krogöy.

Among the notable witnesses mentioned by Brooke was the Bishop of Nordland and Finmark, who, some time before 1820, saw a couple of sea-serpents in Trondhjem fiord. In the summer of 1820 a young fisherman also had the luck to see two together near Hundholm.

The reports are remarkably unanimous, at least about the animals' appearance. They were like snakes in the shape of the head, showing above the surface those large vertical coils that Pontoppidan has taught us to recognize, and they were dark grey. This difference in colour is not enough to imply that the Scandinavian sea-serpents are necessarily of different species from the blackish brown American ones. Later Scandinavian observers were to say that they were blackish brown, and in any case it is difficult to judge a very dark colour which will be affected by that of the sea and sky. But anatomically the Norwegian type with its large coils does seem very different from the American one with a row of humps along its back. This is at once clear if one attempts to draw the two types to scale.

There is little in the nine Norwegian reports, which are usually not very detailed, printed in the *Notizen* for the years 1827 to 1843,[2] which is worth remarking on, except for the appearance in 1837 of an enormous specimen with a horse's head and mane, a moustache like a seal's and with black eyes as big as saucers. On the other hand the seven reports collected by Professor Rathke after a stay in Norway are rich in detail. With one exception they come from Kristiansund or a neighbouring fjord, and the witnesses are from very different classes. Besides the usual fisherman, and a workman, Nils Ree, there are two merchants, Wilhelm Knudtszon and John Johnson, a theology student called Booklune, Hammer and Kraft, and a *sorenskriver*, or sort of country magistrate, called Gæschke.

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[1] E.g. by Sejerstad fisherman in Foldenfjord in 1818, by John Greger and other fishermen in Vega fjord in August 1819; at Fieldvigen, off North Cape, in Mageröy Sound and in Varangerfjord at unspecified dates: and at Soröy in the summer of 1822.

[2] Five in 1827 in Christiania (Oslo) fjord, a whole series in Rödö and Södelöw fjords in 1832, one near Storfosen and the Krovaag Islands in 1837, and one in Kristiansund and one near Ibbestad in 1843, all in the summer.

Perhaps the most interesting report is that of Lars Johnöen, a fisherman of Smölen who was fifty years old when he told his story. It is not particularly exciting—indeed it is for this very reason that it has the ring of truth. Moreover it reveals, as all the unexaggerated descriptions do, the true nature of the so-called 'monster' with the mane; it is a harmless beast which is both shy and inquisitive. Here is the whole of Johnöen's account, as Rathke took it down, with the professor's comments in brackets:

> I have seen the sea-serpent several times, but for the longest time and nearest to me, twelve years ago in the dog-days in the fjord not far from here (Christiansund), when I was alone, one noon, angling in a boat. Then I saw it within two hours three times for a considerable time, quite near to me. It came close to my boat, so that it was only about six feet from me. (He placed himself in the room at a distance of nearly six feet from the wall, and said, this was about the distance between him and the serpent.) I became alarmed; recommended my soul to God, laid myself down in the boat, and only held my head so far over it, that I could observe the serpent. It swam now past the boat, that was vehemently agitated by the ripple caused by its movements in the water, which was previously smooth as a mirror, and afterwards took itself off. After it had swum a considerable distance from me, I wound my angling line round the little instrument commonly used (a frame, moving on an axis) and I began again to fish. Not long afterwards, however, the serpent came again quite close to the boat, which again was violently agitated by the movements made by it in the water. I lay down again, and remained quite still, keeping, however, a watchful eye on the animal. Again it passed me, disappeared far off, and returned, though not so close as before, and at last disappeared, when a light wind rose, and ruffled the water. Notwithstanding my fright I yet observed the animal very accurately. Its length was about five to six fathoms, and the body, which was as round as a snake's, was about two feet in diameter. (Lars Johnöen measured on a table before him with his hands a space of about two feet.) The tail too appeared to me to be round. The head was about as long and as thick as a brandy anker (a ten gallon cask), it was not pointed but bluntly round. The eyes were very large and glistening. Their size (or diameter) was about that of this box here (five inches), and they were as red as my neckerchief (crimson). The animal did not open its mouth, therefore I cannot give its size. It constantly held its head above the surface of the water in an acute angle; not so high, however, that the nose should come over the board of a boat. Close behind the head, a mane like a horse's commenced, extending rather far down the neck, and spreading on both sides, floated on the water; it was of tolerably long hair. The mane as well as the head and the rest of the body was brown as this looking glass frame (dark brown of old mahogany). I could not observe spots,

> or stripes of other colours, nor were there any scales; it seemed as if the body was quite smooth. The movements of the serpent were by turns fast and slow; they were also slow when the animal approached my boat. At the moment in which I could observe it best, its movements were serpentine, up and down. The few undulations, made by those parts of the body and the tail that were out of the water, were scarcely a fathom in length. These undulations were not so high, that I could see between them and the water. (When Lars Johnöen had given this declaration, the drawing which Pontoppidan had given of the animal was shown to him. He looked at it with astonishment, smiled and said that he saw a great resemblance between it and the animal he had seen. He likewise said, that some of the other sea-serpents he had seen were a great deal longer than the one described above.)

Since Johnöen was so close to the beast we must accept what he says about the mane if we accept his report at all. It could not be explained as bunches of seaweed caught on the animal's neck or as gills protruding through gill-slits as some had tried to do. Nils Ree saw a similar animal in Kristiansund fjord at about the same time and gives an almost identical description of the mane, which was also mentioned by Gæschke, Knudtszon, Booklune and numerous anonymous witnesses of the same period.

Johnöen's description of his sea-serpent's eyes—glistening, red and 5 inches in diameter—is also important, and is confirmed by others. Nils Ree said that they were 'very big and shone like a cat's,' and Gæschke, 'What I believed to be the eyes, had according to my estimation the size of the outlines of a tea-cup (3½ inches).' A cat's eyes, by the way, and for that matter a dog's and those of the carnivores in general, will shine with a red or phosphorescent light, depending on the angle they are seen from.

The minute detail of the reports collected by Rathke is clearly the result of intelligent questioning by a very competent man. They all show that the sea-serpent with a mane and big eyes, though very rare in North America, was the most frequent off the Norwegian coast. It also moved in vertical undulations and must likewise be a mammal, as its mane likewise suggests.

There is not much new to be gained from the six sightings off the Norwegian coast between 1842 and 1848[1] and reported in various newspapers and scientific journals except for that of 28 July 1845 when four people, whose good faith is guaranteed by the Rev. P. W. Deinbolt, Archdeacon of Molde, saw a sea-serpent between 40 and 50 feet in length. They were J. C. Lund, bookseller and printer, G. S. Krogh, merchant, Christian Flang, Lund's apprentice, and John Elgenses, labourer. It was seven o'clock on a fine summer's day when 'they saw a long marine animal, which slowly moved itself forward, as it appeared to them, with the help of two fins, on the fore-part of the body nearest the head, which they judged by the boiling of the water on both sides of it'.

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[1] Besides those mentioned in the text these were: near Bergen in 1845 by an Englishman, J. D. Morries Stirling, one in 1846 in Bjornfjord by Daniel Salomonson, his wife and various other people; and, at unspecified dates, two in Romsdalfjord, one of them by a priest, and a further one near Bergen.

This is a red-letter day. It is the first time—apart from Robert Bakewell's vague reference—that anybody on either side of the Atlantic has reported fins on a sea-serpent. Admittedly the fins were not seen, but their existence was deduced. This is a step forward. But had the description of the plesiosaur reached Norway and given people ideas?

The most surprising thing about the Norwegian reports for 1818–48 is the very great variety in the estimated sizes of the beasts. Eleven range between 30 and 150 feet which is reasonable enough, but there are also reports of 550, 650, 1,300 and even 1,800 feet. The gravedigger of Maasöy even maintained that the animal stretched almost all the way from the island of Magerőy to the mainland. The arithmetic mean of the estimated lengths is around 300 feet! This is a very long way beyond anything claimed by the 'humbugging Yankees', who give an average length of 72 feet in Massachusetts and 60 feet in that home of understatement, Maine. Of course, the Norwegian sea-serpent is clearly a different animal, perhaps larger in size—but surely not more than 200 feet larger.

The gravedigger, I should add, being more used to dead bodies than living animals, panicked at the sight of the monster and rowed away for dear life. He was in no state to judge accurately. We find that lengths over 150 feet almost always come from unnamed people or from groups of people on the shore watching the beast out at sea, and it is notorious that the size of distant objects in the water is hard to judge and that information drawn from crowds is likely to be much exaggerated.

A detailed report of an animal with a plesiosaur's long neck that was seen about this time enables us to link the Norwegian and the New Zealand sea-serpents—if only geographically—since it occurred in the Atlantic between Iceland and the Faeroes. Stephen Cave, M.P. for Shoreham, wrote to Philip Gosse quoting from his private journal in which he had noted the story told him by Captain Christmas of the Danish Navy:

> He was lying to in a gale of wind, in a frigate of which he had the command, when an immense shoal of porpoises rushed by the ship, as if pursued, and lo and behold a creature with a neck moving like that of a swan, about the thickness of a man's waist, with a head like a horse, raised itself slowly and gracefully from the deep, and seeing the ship it immediately disappeared again, head foremost, like a duck diving. He saw it only for a few seconds; the part above water seemed about eighteen feet in length. He is a singularly intelligent man, and by no means one to allow his imagination to run away with him.

The reader will recall that sea-serpents were seen in the Hebrides during the unfortunate Stronsa affair, and there were other reports between 1818 and 1848. In July 1818 Captain Brown met the creature between the Hebrides and the Faeroes which Rafinesque described as a sort of giant eel under the name of *Octipos bicolor*. In his *Description of the Shetland Islands* of 1822, Dr Hibbert noted, 'I have heard, in Shetland, of a sea-serpent being seen off the Isle of Stenness, Vailey Island and Dunrossness.'

Sir Walter Scott, who was so interested in Scottish legends, wrote in *The Pirate* (1822):

> The Sea-Snake was also known, which arising out of the depths of Ocean, stretches to the skies his enormous neck, covered with a mane like that of a war-horse, and with its broad glittering eyes, raised mast-head high, looks out, as it seems, for plunder or for victims.

British sailors had also seen the beast out on the high seas. Around 1820 a sea-serpent 60 to 100 feet long which spouted like a whale was seen out in the middle of the Atlantic in latitude 46° N. near 'Barencthy's Rocks' by Lieutenant George Sandford, R.N., who then commanded the merchant ship *Lady Combermere*. A report from so far south on the European side of the Atlantic was quite out of the ordinary, but we must not forget that on 1 August 1786 the crew of the *General Coole* had seen a serpent in latitude 42° 44′ N., north of the Azores.

During the 'American period' four reports of sea-serpents come from the South Atlantic, where they were, with one exception, seen by British witnesses: two near the Cape of Good Hope (in 1829, by Captain Petrie of the *Royal Saxon* and Dr R. Davidson, Superintending Surgeon of the Nagpore Subsidiary Force; and in 1845 or 1846 by two Cape Town residents having a day's fishing at Camp's Bay, C. A. Fairbridge, a considerable authority on marine life, and C. D. Brunette), one on the other side of the ocean off Uruguay (in 1824 by a Bostonian correspondent of Professor Silliman who wished to remain anonymous), and one about half-way between the two (probably between 1825 and 1828 by Captain Frederick W. Beechey, Naval Surveyor to the Royal Navy, as he was sailing towards the Pacific in the *Blossom*).

Unfortunately the descriptions of these sea-serpents are vague and sometimes recall the American type and sometimes the Norwegian, without one being able to be quite certain which. Captain Beechey saw what he thought was a huge tree-trunk, but it dived before he could get a sight of it in the glass. The anonymous Bostonian describes his specimen, which he saw only 10 feet away, as a huge version of a Common Black Snake, 40 feet long and as thick as a 10-gallon keg. It lifted its head 2 feet above the water and its eyes stared at the ship. The South African settlers use the traditional simile: their sea-serpent, which undulated up and down and was between 100 and

200 feet long, looked 'like a string of large casks, floating on the surface of the water'.

All this seems to show the very wide distribution of sea-serpents in the Atlantic *outside the tropics*. Moreover the monster's habitat did not seem to be confined to one ocean.

In 1821 the great Russian explorer Otto von Kotzebue published his account of his first voyage round the world in 1815 to 1818, during which he went to the Bering Straits to search for a North-East Passage. He tells how on Unalaska, one of the Aleutians, he met an agent of the American Company, called Kriukof, who had been there since 1795 and who described being chased by a huge sea-monster.

> Mr Kriukof's description of a sea-animal which pursued him at Beering's Island, where he had gone for the purpose of hunting, is very remarkable: several Aleutians affirm they have often seen this animal. If is of the shape of the red serpent,[1] and is immensely long; the head resembles that of a sea-lion, and two disproportionately large eyes give it a frightful appearance. 'It was very fortunate for us,' said Kriukof, 'that we were so near land, or else the monster would have swallowed us: it stretched its head far above the water, looked about for prey, and vanished. The head soon appeared again, and that considerably nearer: we rowed with all our might, and were very happy to have reached the shore before the serpent. The sea-lions were so terrified at the sight, that some rushed into the water, and others hid themselves on the shore.['] The sea often throws up pieces of flesh which, according to their opinion, is that of this serpent, which no animal, not even the raven, will touch. Some Aleutians, who had once tasted some of it, suddenly died. If a sea serpent really has been seen on the coast of North America, it might have been one of this frightful species.

The poor sea-lions' terror, and that of Kriukof himself, need not necessarily have been justified. Because an unknown animal looks terrifying it need not be deadly or even dangerous. And the notion that its flesh is poisonous is obviously the usual superstition about any strange and alarming animal. Nor do we know that it *was* the monster's flesh. There is nothing odd about people dying from eating stale meat washed up by the sea.

At all events Kriukof's tale must be included in the sea-serpent's dossier, but whether the animal belonged to either the American or the Norwegian type his description is too vague for us to say. Moreover it is reminiscent of a big sea-beast which lived in those waters but was thought to be already extinct. This is Steller's Sea-cow (*Hydrodamalis stelleri*), which I have mentioned briefly in an earlier chapter, but which many people have never heard of. Its all too short history is as follows.

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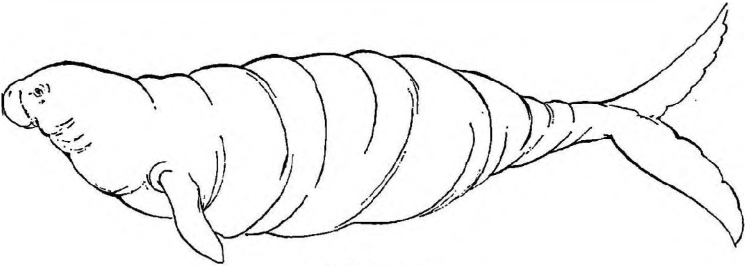
[1] It is hard to tell what 'red serpent' Kriukof is talking about. There are certainly no snakes in the Aleutians. It might be a species of *Storeria*, with a striking red belly, which is found even in the north of Canada.

In 1741, Vitus Bering, a Dane whom Peter the Great of Russia had put in charge of the fleet trying to discover whether Siberia was joined to America, was shipwrecked in the *Svatoi Piotr* on an inhospitable island between Kamchatka and the Aleutians. There he died of scurvy, cold and exhaustion. The island was called after him, and with the neighbouring Copper Island formed the Komandorski (or Commander's) Islands. It was around these islands in the shallow river mouths that the German naturalist and surgeon of the expedition, Georg Wilhelm Steller, discovered a whole population of huge, lazy and peaceable sea-cows, browsing on seaweed and sea-kale. Steller realized that these huge moustached and fish-tailed mammals, 23 to 30 feet long and weighing up to 4 tons, were vast relatives of the Atlantic manatees and the Indian dugong of the tropics.

The corpulent sea-cow was a godsend to the shipwrecked mariners. Its meat was excellent, and they found it easy to kill such helpless brutes. When the expedition finally repaired their ship and returned to the mainland the word soon got around about the sea-cow and also, alas, about a new species of Fur-seal (*Eumetopias jubata*) which Steller had also discovered. Merciless hunters descended on the islands. By 1754 the sea-cow was supposed to have been exterminated on Copper Island, and in 1768 one Popoff killed the last one on Bering Island. It had taken just twenty-seven years.

But it was long doubted whether Steller's sea-cow really became totally extinct at that very moment, and Benedict Dybowski was later to show that some had almost certainly survived around Bering Island until the 1830s.

Thus it is very possible that the big animal with a sea-lion's head which so terrified Kriukof and his companions some time between 1795 and 1818 may have been a Steller's sea-cow. Admittedly its eyes are not 'disproportionately large', but they have no eyelids and could have been frightening. It sometimes lifts its head above the water and is not in the least shy of



39. Steller's sea-cow

approaching man. Its blackish skin, with irregular creases, looks like the bark of an oak and could remind one of a reptile's scales. And its fat forms a series of great rolls round its body which might look like a series of humps out of the water. Someone ignorant of anatomy might think they were a serpent's coils.

It therefore seems to me that Kriukof's story does not show that there is a sea-serpent in the icy waters of the North Pacific, but it may be the last circumstantial evidence of Steller's sea-cow near Bering Island.

Was there also a sea-serpent in the Indian Ocean? On 25 November 1834 Lieutenant W. Foley of the British Naval Intelligence wrote to the *Journal of the Asiatic Society of Bengal* about a strange encounter in the Bay of Bengal:

> On my voyage to Madras (in May last,) I saw a most extraordinary fish, which had never before been seen by any seaman on board, although some of the officers and crew had been employed in the whale fishery. It was the size of a whale, but differing from that animal in shape, spotted like a leopard, in a very beautiful manner: it came close under the stern of the ship, during a calm, and we had a magnificent opportunity for viewing it. It had a very large dorsal fin which it moved about with great rapidity, when made angry, in consequence of the large stones that we threw down upon it rashly; for it possessed sufficient strength to have broken the rudder and stove in the stern of the ship. Several large fish (seemingly dog-fish), about a cubit in length and upwards, were gambolling about the monster, entering its mouth at pleasure and returning to the water again. The following will give you some idea of its shape. The mouth very large, dorsal fin black or dark brown, tail also; body covered with brown spots like a leopard, head lizard-shaped. May it not be the Plesiosaurus, or a species of that fish known to have existed formerly in the waters of the ocean?

People were beginning to know about the plesiosaur and were later to be obsessed by it. Ten years earlier Foley would have had the sea-serpent in mind, and his account was to be cited in several articles on that subject. Yet the shape of his monster is not in the least like either animal.

On the other hand it is hardly a hoax, especially as the same monster was seen by other people 3,500 miles away in another ocean. As a result of Foley's letter, H. Piddington, an amateur naturalist from Calcutta, also wrote to the *Journal of the Asiatic Society of Bengal* that in December 1816 he had seen a similar spotted creature at the entrance of the Bay of Manila in the Philippines when he was commanding a small Spanish brig. The fish was at least 70 or 80 feet long and 30 feet wide. The Filipino sailors seemed to know it well by the name of *chacon*. Piddington questioned them about it and learnt that they were very frightened of it, because it often attacked and destroyed small fishing-boats. Once it had even swallowed a man who had been pushed overboard in the crush to look at the monster.

They also told him that in 1820 or 1821 an American ship's boat with an officer and a few men on board was rowing across Manila Bay when they suddenly saw the spotted monster. The terrified sailors dropped their oars, and the mate looked round to see its open jaws almost over him. Having nothing else at hand he threw the tiller into its mouth. The jaws closed with a tremendous crash, and it dived under the boat and disappeared.

> 'We do not like to tell it,' said the American captain, 'for fear of being laughed at; but, my officer is quite trust-worthy, and we have learnt from the fishermen too, that there is some strange species of large fish highly dangerous to their boats.'

From the monster's voracious habits Piddington thought it must be related to the rays or sharks. He had heard from his friend Dr Harlan (who described the zeuglodon) about the discovery of fossil remains of giant sharks related to the savage *Carcharias* or Blue Shark, and he concluded that 'the fish seen by Lieut. Foley, and the chacon of the bay of Manila may be individuals of the same family as those only known to us as yet by their fossil remains'.

The whole story seems pretty unlikely: the same unknown animals seen so very far apart; a leopard-fish 70 or 80 feet long with a lizard's head and given to attacking boats is suspiciously like the old fables of Scylla or the *Sæ-Orm*. And the tale of the American ship's boat reads like the most shameless hoaxes that have encumbered the problem of the sea-serpent.

Yet the whole thing is closely founded on fact. Piddington's identification was not far out. When he saw the fish it was unknown to zoology. But twelve years later one was harpooned at Table Bay, near the Cape of Good Hope. Dr Andrew Smith studied its carcase and sent its skin to the Paris Museum where it was stuffed and may still be admired. It was the Whale-shark, which Smith described in 1829 under the name of *Rhineodon typus* (see Plate 34 and Fig. 24 on page 126).

Piddington and Foley may be excused for knowing nothing about it in 1834, for Smith had mentioned it but briefly in 1829 in a note modestly entitled 'Contributions to the Natural History of South Africa', and it was not until twenty years later that he published a detailed illustrated description. Even then it remained unknown to most zoologists for many years.[1]

The vast Whale-shark appears to reach and perhaps even exceed a length of 65 feet, but it is the gentlest of fish, living upon plankton and sometimes even on plant life. It does, however, have an unfortunate fondness for rubbing itself against boats' hulls. This generally costs it its life when the boat is large and fast, but capsizes the boat when it is small and slow. Hence its evil reputation. Popular fear and imagination can soon turn this browser upon shrimps and algae into bloodthirsty man-eater.

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[1] The spotted monster that the crew of the *Ceres* attacked in Mariveles bay, Manila, in 1891 was probably a whale-shark, especially as the natives described it as a *schaken* (as the Dutch report spelt it).

Like that of Steller's sea-cow, the story of the Whale-shark is instructive to the student of the sea-serpent. It shows that we should not reject descriptions which do not agree with the traditional one, for perhaps we are on the trail of a different creature, and that stories which seem too dramatic to be true may yet have a solid basis in fact. So we should be cautious of over-caution.

The discovery of a shark nearly twice as big as the largest known fish, a spotted fish, found in all tropical waters, that swims too slowly to escape and makes no attempt to do so, should encourage the sea-serpent's friends and put its enemies to shame. But the sea-serpent is a very different creature, as quick and lively as the other is slow, as shy and timorous as the other is impassive, as discreet in colour as the other is conspicuous, and its chances of being seen and captured are therefore very much less.

Meanwhile the sea-serpent began to fall into disrepute. The scientists like Rafinesque, Peck, Silliman, Hooker and Rathke, who insisted on believing in it, and were apt to do so the more if they were ignorant of *all* its appearances, became fewer and fewer. When a Nantucket whaleship reported seeing a sea-serpent in August 1846, B. H. Révoil, the French editor of the *New York Herald*, went off to see for himself, despite the general incredulity. He took part in an excursion in which the beast was seen and shot at, but unfortunately the style of his report would not have convinced the doubters. Other witnesses held their tongues. And the numbers of unbelievers and mockers increased. Henry Thoreau tells a story about the great Daniel Webster:

> The story is that Webster had appointed to meet some Plymouth gentlemen at Manomet and spend the day fishing with them. After the fishing was over he set out to return to Duxbury in his sail-boat with Peterson, as he had come, and on the way they saw the sea serpent, which answered to the common account of this creature.[1] It passed directly across the bows only six or seven rods off, and then disappeared. On the sail homeward, Webster, having had time to reflect on what had occurred, at length said to Peterson, 'For God's sake never say a word about this to any one, for if it should be known that I have seen the sea serpent, I should never hear the last of it, but, wherever I went, should have to tell the story to every one I met.' So it had not leaked out till now.

If this story is an invention it is of diabolical ingenuity, for Webster himself could not have disproved it! But if it is true the statesman's silence was deplorable from a scientific point of view. There is all the more reason to welcome two British scientists of this period who kept a place for the sea-serpent in their publications.

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[1] A 'perfectly reliable witness' had seen the monster between Manomet and Plymouth many years before 'with a head somewhat like a horse, raised some six feet above water, and his body the size of a cask trailing behind.'

The first was Dr Robert Hamilton who wrote upon 'Amphibious Carnivora' in Sir William Jardine's *Naturalist's Library* in 1839:

> Now, it so happens [he remarked] that, even at the present day, it is asserted that such Monsters exist, whose characters all the assiduity of Naturalists has not hitherto satisfactorily ascertained, and the consideration of these will form the concluding portion of this volume. The most remarkable of these creatures are the SEA-SERPENT and the KRAKEN; and, as some allusion to these animals would naturally be expected in the Naturalist's Library, so no occasion could be found so eligible as the present. The *Amphibia* [Pinnipedia], then, and the *herbivorous Cete* [Sirenia], the *Sea-Serpent* and *Kraken*, will form, at least, a natural combination.

The *kraken*, which was not then known to be a huge cephalopod, had no business in that volume, but the sea-serpent, at least in Dr Oudemans's view, fitted in particularly well with pinnipeds, though this does not seem to have been Hamilton's reason for including it. In his chapter on the subject he gives no theory about its identity, but merely attempts to state what was known at that time.

Edward Newman, editor of the *Zoologist* of London, went much further. In 1847 he opened the columns of his journal to reports about the sea-serpent, and there is little doubt that his courage in doing so was largely responsible for the great 'British period' which followed. Stimulated by this scientific interest reports accumulated for half a century. They were perhaps less frequent than before, but they were more detailed and better authenticated, and by careful study of them one can begin to identify the animal.

Newman's attitude to the problem was admirably humble and strictly scientific:

> It has been the fashion for so many years to deride all records of this very celebrated monster, that it is not without hesitation I venture to quote the following paragraphs in his defence ...
>
> Naturalists, or rather those who choose thus to designate themselves, set up an authority above that of fact and observation, the gist of their enquiries is whether such things *ought to be*, and whether such things *ought not to be*; now fact-naturalists take a different road to knowledge, they enquire whether such things *are*, and whether such things *are not* ... The only question therefore for the fact-naturalists to decide, is simply, whether all of the records now collected, can refer to whales, fishes, or any other marine animals with which we are at present acquainted.

7

The *Daedalus*'s Prehistoric Saurian

(Beginning of the British Period, 1848)

The ichthyosaurs and plesiosaurs that make up the greater part of the group were numerous animals in the Mesozoic. No member of the subclass is known to have survived beyond the end of the Cretaceous, although it has often been suggested that tales of sea-serpents indicate the continued survival of plesiosaurs; since the discovery of the coelacanth fish *Latimeria* zoologists have become cautious about rejecting such possibilities!

PROFESSOR J. Z. YOUNG, *The Life of Vertebrates*

DESPITE the hundreds of reports from America, and the frequent tales from Norway, Europe was still sceptical about the sea-serpent. But the evidence of Captain Peter M'Quhae and the crew of H.M.S. *Daedalus*, nineteen guns, had to be believed—at least in Great Britain.

On 4 October 1848 the frigate *Daedalus* arrived at Plymouth from the East Indies. Soon there began to be rumours in the port that she had met a sea-serpent 100 feet long, between the Cape and St Helena, and that it had been watched for twenty minutes by the captain and most of the officers and crew. The story appeared in several newspapers, including *The Times* of 10 October. Anyone familiar with earlier reports—or indeed endowed with a little common sense—would have found the account somewhat suspect. The diameter of the exposed part of the body was given as 16 inches, yet the jaws were 'full of large jagged teeth' and 'seemed sufficiently capacious to admit of a tall man standing upright between them'.

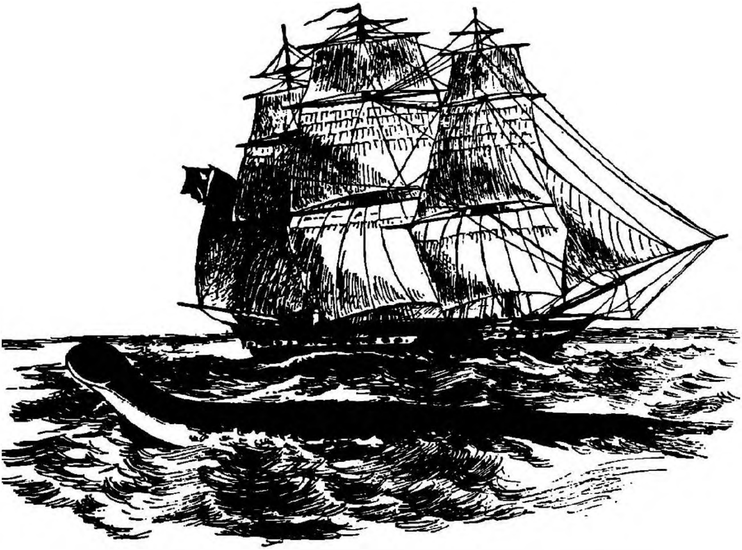
The Admiralty thereupon asked the *Daedalus* to supply a denial of the story or a detailed report, and Captain M'Quhae wrote the following letter to Admiral Sir W. H. Gage.

> *Her Majesty's Ship Daedalus, Hamoaze, Oct. 11.*
>
> Sir,—In reply to your letter of this day's date, requiring information as to the truth of a statement published in *The Times* newspaper, of a sea-serpent of extra-

> ordinary dimensions having been seen from Her Majesty's ship *Daedalus*, under my command, on her passage from the East Indies, I have the honour to acquaint you, for the information of my Lords Commissioners of the Admiralty, that at 5 o'clock p.m. on the 6th of August last, in latitude 24° 44′ S., and longitude 9° 22′ E., the weather dark and cloudy, wind fresh from the N.W., with a long ocean swell from the S.W., the ship on the port tack heading N.E. by N., something very unusual was seen by Mr. Sartoris, midshipman, rapidly approaching the ship from before the beam. The circumstance was immediately reported by him to the officer of the watch, Lieut. Edgar Drummond, with whom and Mr William Barrett, the Master, I was at the time walking the quarter-deck. The ship's company were at supper.
>
> On our attention being called to the object it was discovered to be an enormous serpent, with head and shoulders kept about four feet constantly above the surface of the sea, and as nearly as we could approximate by comparing it with the length of what our main-topsail yard would show in the water, there was at the very least 60 feet of the animal *à fleur d'eau*, no portion of which was, to our perception, used in propelling it through the water, either by vertical or horizontal undulation. It passed rapidly, but so close under our lee quarter, that had it been a man of my acquaintance, I should easily have recognised his features with the naked eye; and it did not, either in approaching the ship or after it had passed our wake, deviate in the slightest degree from its course to the S.W., which it held on at the pace of from 12 to 15 miles per hour, apparently on some determined purpose.
>
> The diameter of the serpent was about 15 or 16 inches behind the head, which was, without any doubt, that of a snake, and it was never, during the 20 minutes that it continued in sight of our glasses, once below the surface of the water; its colour a dark brown, with yellowish white about the throat. It had no fins, but something like a mane of a horse, or rather a bunch of seaweed, washed about its back. It was seen by the quartermaster, the boatswain's mate, and the man at the wheel, in addition to myself and officers above mentioned.
>
> I am having a drawing of the serpent made from a sketch taken immediately after it was seen, which I hope to have ready for transmission to my Lords Commissioners of the Admiralty by to-morrow's post. I have, &c,
>
> PETER M'QUHAE, Captain.

This letter was published in *The Times* of 13 October, and the British public were much excited. Naval officers did not tell lies to the Lords of the Admiralty. The excitement continued on 28 October when the *Illustrated London News* published several pictures of the animal drawn from the sketches and instructions of Captain M'Quhae and approved by other witnesses (Plate 38 and Fig. 40 on page 200).

Edward Newman tried to publish M'Quhae's original drawing in the *Zoologist*, but the copyright had been bought by the *Illustrated London News*. He was, however, able to obtain and publish some private notes on the subject made by another officer on board, Lieutenant Edgar Drummond, which confirm the captain's account.



40. The *Daedalus* sea-serpent, 1848, after Captain M'Quhae's description

In the 4 to 6 watch, at about 5 o'clock, we observed a most remarkable fish on our lee quarter, crossing the stern in a S.W. direction; the appearance of its head, which, with the back fin, was the only portion of the animal visible, was long, pointed, and flattened at the top, perhaps ten feet[1] in length, the upper jaw projecting considerably: the fin was perhaps twenty feet in the rear of the head, and visible occasionally; the captain also asserted that he saw the tail, or another fin, about the same distance behind it; the upper part of the head and shoulders appeared of a dark brown colour, and beneath the under jaw a brownish white.

It pursued a steady undeviating course, keeping its head horizontal with the surface of the water, and in rather a raised position, disappearing occasionally beneath a wave for a very brief interval, and not apparently for purposes of respiration. It was going at the rate of perhaps from twelve to fourteen miles an hour, and when nearest was perhaps one hundred yards distant: in fact it gave one quite the idea of a large snake or eel.

No one in the ship has ever seen anything similar, so it is at least extraordinary. It was visible to the naked eye for five minutes, and with a glass for perhaps fifteen more. The weather was dark and squally at the time, with some sea running.

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[1] This length clearly refers to the part of the head and neck out of water at the front.

We should not be too surprised that Drummond speaks of a 'back fin' when his captain says 'It had no fins.' Quite clearly what M'Quhae called 'something like the mane of a horse' seemed to Drummond to be a dorsal fin. Whether it consisted of separate spines or a single fringe, a dorsal fin or crest could easily look like a mane.

Among the other evidence about this important encounter is a letter to *The Times* written by an officer of the *Daedalus* ten years later. It was provoked by allegations by Captain Frederic Smith of the Merchant Service in the same newspaper.

Smith's story was as follows: On 28 December 1848, a short time after the *Daedalus* incident, his ship, the *Pekin*, was becalmed in much the same position in the South Atlantic. There they saw,

> about half-a-mile on port beam a very extraordinary-looking thing in the water of considerable length. With the telescope we could plainly discern a huge head and neck, covered with a long shaggy-looking kind of mane, which it kept lifting at intervals out of the water. This was seen by all hands and declared to be the great sea-serpent. [See Plate 32]
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> I determined on knowing something about it, and accordingly lowered a boat, in which my chief officer and four men went, taking with them a long small line in case it should be required. I watched them very anxiously, and the monster seemed not to regard their approach. At length they got close to the head. They seemed to hesitate, and then busy themselves with the line, the monster all the time ducking its head, and showing its great length. Presently the boat began pulling towards the ship, the monster following slowly.
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> In about half-an-hour they got alongside; a tackle was got on the mainyard, and it was hoisted on board. It appeared somewhat supple when hanging, but so completely covered with snaky-looking barnacles about eighteen inches long, that we had it some time on board before it was discovered to be a piece of gigantic seaweed, 20 feet long, and 4 inches diameter; the root end of which appeared when in the water like the head of the animal, and the motion given by the sea caused it to seem alive. In a few days it dried up to a hollow tube, and as it had a rather offensive smell was thrown overboard.

This story seems to me rather exaggerated, though not as regards the dimensions of the seaweed. Some brown seaweeds of the Laminaria family may reach a thousand feet in length or more in the southern seas. In 1886 Captain John Stone of the *Clever* hauled in a piece of *Macrocystis pyrifera* more than 1,500 feet long near the Equator. But I cannot believe that if Captain Smith had *really* thought it was a sea-serpent he would have sent his men to catch it with no more than 'a long small line', nor that they would have set out so armed had they really had any doubt what it was.

During the long years I have worked on the sea-serpent—half of which I have spent beside the sea—I have sometimes seen a floating object which at first glance looked like the monster, and I have felt a moment of excitement as the waves brought it to life. But the illusion never survives if one looks at the object carefully, and is impossible if one is less than a hundred yards away. One would have to be disingenuous or very short-sighted to pretend otherwise.

It is much more likely that Captain Smith quickly saw his mistake and *then* sent a boat to find out what it was that looked so like a sea-serpent. Whereupon he concluded that what had deceived him for a moment could have deceived others for twenty minutes.

But there are much graver doubts about Captain Smith's story. For it seems most unlikely that it happened to him at all. Captain Herriman of the *Brazilian* had an identical adventure on 24 February 1849, two months after the *Pekin*'s alleged encounter, but Herriman did not wait ten years to mention it. The story appeared in the London *Sun* on 9 July 1849.

> The accounts given by Smith and Herriman [remarked Commander R. T. Gould] are so singularly alike that one might be pardoned for thinking that one was copied from the other. That two captains of merchant vessels should both be becalmed at about the same spot, in the same season (southern summer, 1848–9); that both should sight, on each occasion about half a mile away, something which both took to be a sea-creature; that both should send a boat to it; that both should discover it to be a piece of seaweed; that both should hoist it on board; and, finally, that both should jettison it before reaching England—is, certainly, a very remarkable string of coincidences.

The chief difference between the two stories is that Herriman went after the supposed monster himself armed with a harpoon and that he realized his mistake before he got to it. This gives his story a ring of truth that Smith's lacks.

But whatever the truth of the matter, the fact that someone couldn't tell chalk from cheese does not mean that cheese is really chalk. And even Herriman would have had no right to say what Smith said in *The Times* of 12 February 1858, that he had no doubt the *Daedalus*'s sea-serpent 'was a piece of the same weed'. This received a very forthright reply:

> Sir, Observing in your paper of yesterday's date a letter from a correspondent on the marine animal commonly called the 'sea-serpent,' in the concluding paragraph of which he mentions that he has no doubt the object seen from Her Majesty's Ship Daedalus in the month of August, 1848, when on the passage from the Cape of Good Hope to St. Helena, was a piece of the same seaweed observed by himself, I beg to state that the object seen from Her Majesty's ship on that occasion was beyond all question, a living animal, moving rapidly through the water against a cross sea, and within five points of a fresh breeze, with such

> velocity that the water was surging under its chest as it passed along at a rate, probably, of not less than 10 miles per hour.
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> Captain M'Quhae's first impulse was to tack in pursuit, ourselves being on a wind on the larboard tack, when he reflected that we neither could lay up for it nor overhaul it in speed. There was nothing to be done, therefore, but to observe it as accurately as we could with our glasses as it came up under our lee quarter and passed away to windward, at its nearest position being not more than 200 yards from us; the eye, the mouth, the nostril, the colour and form all being most distinctly visible to us.
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> We all felt greatly astonished at what we saw, though there were sailors among us of 30 and 40 years standing, who had travelled most seas and seen many marvels in their day. The captain was the first to exclaim: 'This must be that animal called the sea-serpent,' a conclusion we all at last settled down to. My impression was that it was rather of a lizard than a serpentine character, as its movement was steady and uniform, as if propelled by fins, not by any undulatory power. It was in sight from our first observing it about 10 minutes, as we were fast leaving one another on opposite tacks with a freshening breeze and the sea getting up.
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> I feel, Sir, I have already occupied more of your time and space than is justifiable, and have the honour to remain your obedient servant
>
> AN OFFICER OF HER MAJESTY'S SHIP 'DAEDALUS'.
>
> *Feb. 13.*

This concludes the first-hand evidence about the *Daedalus* sea-serpent. The three accounts agree pretty well about the facts. If they differ a little in their interpretations, that is natural enough. While Captain M'Quhae calls it 'an enormous serpent', though he gives it 'shoulders', Lieutenant Drummond is more cautious and says 'it gave one quite the idea of a large snake or eel', and the nameless officer disagrees with his captain and says that it was 'rather of a lizard than a serpentine character'. There is nothing contradictory in all this, it must be an animal reminiscent in some respects of a snake, but not in all.

In the *Literary Gazette* of 21 October 1848 a learned contributor quoted from Pontoppidan's now classic text and published one of the bishop's illustrations, adding:

> We have now only to point to the very remarkable resemblance between Captain M'Quhae and Pontoppidan's description. One might fancy the gallant Captain had read the old Dane, and was copying him, when he tells of the dark brown colour and white about the throat, and the neck clothed as if by a horse's mane or a bunch of sea-weed, the exact words of the historian.

But he also points out most perspicaciously the difference between the two: 'The motion was not perceptibly impelled by vermicular or land-serpent action. Had it, then, large fins? There must be some power.'

The publicity which the *Daedalus* affair attracted had several consequences. There was a sudden harvest of similar reports, but also some new hoaxes.

The public learnt that this was not the first time British officers had vouched for the sea-serpent's existence. There was, as we have seen, Lieutenant Sandford of the *Lady Combermere* around 1820, Captain Beechey of the *Blossom* in 1826, Captain Petrie of the *Royal Saxon* in 1829, four officers and a storekeeper in Canada in 1833, and finally Lieutenant George Hope of H.M.S. *Fly*, which I shall be dealing with in more detail later.

On the other hand, just as these respectable witnesses were gaining credence for the sea-serpent, a hoax discredited it again.

Captain M'Quhae's report had hardly been published a week when the *Globe* printed a letter, which had been posted on 19 October in Broomielaw in the port of Glasgow, from James Henderson, captain of the *Mary Ann*. He said that on 30 September he had met off Lisbon the *Daphne*, a brig from Boston, whose captain, Mark Trelawny, told him that ten days earlier when in latitude 4° 11′ S. and longitude 10° 15′ E. he had seen 'a huge serpent, or snake, with a dragon's head' at which he had fired with a gun hastily loaded with spike-nails and scrap-iron. The beast, which was 100 feet long, appeared to have been hit and was seen 'foaming and lashing the water at a fearful rate' before making off at 15 or 16 knots.

When *The Times* rashly reprinted this story it drew a sarcastic letter, signed 'H.W.', asking how the *Daphne* had managed to travel some 5,000 miles from latitude 4° 11′ S. to Lisbon in ten days. This would have meant an average speed of 20 knots. 'Probably,' said H.W. drily, 'the serpent took the brig in tow.' Inquiries soon showed that there had been no Captain Henderson nor *Mary Ann* at Broomielaw during the past months, and that the letter in the *Globe* was a fabrication.

The *Daedalus* could not be so easily disposed of. Yet some scientists, unshakably incredulous after fakes like Koch's and fabrications like the *Daphne*, were determined to be rid of it. Sir Richard Owen, the great anatomist who was then Curator of the Hunterian Museum, took up a crusade against the sea-serpent. Owen was then forty-five years old and had a great, and largely deserved, reputation, which he misused shamelessly in settling zoological questions in the most peremptory fashion. He had come to regard himself as the pope of his subject, and his excommunication of Darwin and his Theory of Evolution will give some idea of his strictly conservative mind. Darwin called him 'one of my chief enemies (the sole one who has annoyed me)' and the sea-serpent would have shared Darwin's sentiments. Owen had been asked his view upon the *Daedalus* sea-serpent and had written a long letter to an anonymous nobleman. This he subsequently communicated to *The Times* with a sketch, which the newspaper did not reproduce but explained in a footnote:

> This was a reduced copy of the drawing of the head of the animal seen by Captain M'Quhae, attached to the submerged body of a large seal, showing the long eddy produced by the action of the terminal flippers.

Here is the part of Sir Richard's letter which deals with the *Daedalus* sea-serpent:

> The sketch will suggest the reply to your query 'whether the monster seen from the Daedalus be anything but a saurian?' If it be the true answer it destroys the romance of the incident, and will be anything but acceptable to those who prefer the excitement of the imagination to the satisfaction of the judgment.
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> I am far from insensible to the pleasures of the discovery of a new and rare animal, but before I can enjoy them certain conditions, *e.g.* reasonable proof or evidence of its existence, must be fulfilled. I am also far from undervaluing the information which Captain M'Quhae has given us of what he saw. When fairly analysed, it lies in a small compass; but my knowledge of the animal kingdom compels me to draw other conclusions from the phenomena than those which the gallant captain seems to have jumped at.
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> He evidently saw a large animal moving through the water, very different from anything he had before witnessed—neither a whale, a grampus, a great shark, an alligator,[1] nor any other of the larger surface-swimming creatures which are fallen in with in ordinary voyages ... No fins were seen (the captain says there were none; but from his own account he did not see enough of the animal to prove the negative). 'Something like the mane of a horse, or rather a bunch of sea-weed washed about its back.' So much of the body as was seen was 'not used in propelling the animal through the water, either by vertical or horizontal undulation'. A calculation of its length was made under a strong preconception of the nature of the beast. The head, *e.g.*, is stated to be, 'without any doubt, that of a snake'; and yet a snake would be the last species to which a naturalist conversant with the forms and characters of the heads of animals would refer such a head as that of which Captain M'Quhae has transmitted a drawing to the Admiralty, and which he certifies to have been accurately copied in the *Illustrated London News* for October 28, 1848, p. 265.
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> ... The foregone conclusion, therefore, of the beast's being a sea-serpent, notwithstanding its capacious vaulted cranium, and stiff, inflexible trunk, must be kept in mind in estimating the value of the approximation made to the total length of the animal, as 'at the very least 60 feet'.[2] This is the only part of the description, however, which seems to me to be so uncertain as to be inadmissible, in an attempt to arrive at a right conclusion as to the nature of the animal.
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> The more certain characters of the animal are these:—Head, with a convex, moderately capacious cranium, short obtuse muzzle, gape of the mouth not

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[1] As R. T. Gould pointed out, 'An alligator surface-swimming on the high seas would indeed be a phenomenon.'

[2] Captain M'Quhae did *not* say that the total length was at least 60 feet. This was the length he gave for the visible part *à fleur d'eau.* Owen's pretence that this is an extrapolated figure for the whole animal is made quite unfairly and with the obvious intention of reducing the beast's size more than can be justified.

extending further than to beneath the eye, which is rather small, round, filling closely the palpebral aperture; colour, dark brown above, yellowish white beneath; surface smooth, without scales, scutes, or other conspicuous modifications of hard and naked cuticle ... Nostrils not mentioned, but indicated in the drawing by a crescentic mark at the end of the nose or muzzle.

All these are the characters of the head of a warm-blooded mammal; none of them those of a cold-blooded reptile or fish. Body long, dark brown, not undulating, without dorsal or other apparent fins; 'but something like the mane of a horse, or rather a bunch of sea-weed washed about its back.' ... If an opinion can be deduced as to the integuments from the above indication, it is that the species had hair, which, if it was too short and close to be distinguished on the head, was visible where it usually is the longest, on the middle line of the shoulders or advanced part of the back, where it was not stiff and upright like the rays of a fin, but 'washed about'. Guided by the above interpretation, of the 'mane of a horse, or a bunch of sea-weed', the animal was not a cetaceous mammal, but rather a great seal.

But what seal of large size, or indeed of any size, would be encountered in latitude 24° 44′ south, and longitude 9° 22′ east—viz., about three hundred miles from the western shore of the southern end of Africa[1]? The most likely species to be there met with are the largest of the seal tribe, *e.g.* Anson's sea lion, or that known to the southern whalers by the name of the 'Sea Elephant', the *Phoca proboscidea*, which attains the length of from 20 to 30 feet.[2] These great seals abound in certain of the islands of the southern and antarctic seas, from which an individual is occasionally floated off upon an iceberg. The sea lion exhibited in London last spring, which was a young individual of the *Phoca proboscidea*, was actually captured in that predicament, having been carried by the currents that set northward towards the Cape, where its temporary resting-place was rapidly melting away.

When a ... *Phoca proboscidea* or *Phoca leonina* is thus borne off to a distance from its native shore, it is compelled to return for rest to its floating abode after it has made its daily excursions in quest of the fishes or squids that constitute its food. It is thus brought by the iceberg into the latitudes of the Cape, and perhaps further north, before the berg has melted away. Then the poor seal is compelled to swim as long as strength endures; and in such a predicament I imagine the creature was that Mr. Sartoris saw rapidly approaching the Daedalus from before the beam, scanning, probably, its capabilities as a resting-place, as it paddled its long stiff body past the ship. In so doing, it would raise a head of the form and colour described and delineated by Captain M'Quhae, supported on a neck also of the diameter given; the thick neck passing into an inflexible trunk, the longer and coarser hair on the upper part of which would give rise to the idea, especially if the species were the *Phoca leonina*, explained by the similes above cited. The organs of locomotion would be out of sight. The pectoral fins being set on very low

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[1] Actually this position is 300 miles from the nearest land, but 1,000 miles from the Cape.

[2] According to Victor B. Scheffer's authoritative work on the subject (1958) the greatest recorded length for a sea-elephant, a male of the North Pacific series, *Mirounga angustirostris*, is really 22 feet from end to end including the hind flippers.

> down, as in my sketch, the chief impelling force would be the action of the deeper immersed terminal fins and tail, which would create a long eddy, readily mistakeable by one looking at the strange phenomenon with a sea-serpent in his mind's eye for an indefinite prolongation of the body.
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> It is very probable, that no one on board the Daedalus ever before beheld a gigantic seal freely swimming in the open ocean ... but the creative powers of the human mind appear to be really very limited, and, on all the occasions where the true source of the 'great unknown' has been detected—whether it has proved to be a file of sportive porpoises, or a pair of gigantic sharks—old Pontoppidan's sea serpent with the mane has uniformly suggested itself as the representative of the portent, until the mystery has been unravelled.

This was Professor Owen's explanation of *Daedalus* sea-serpent, but he does have some doubts.

> I have no unmeet confidence in the exactitude of my interpretation of the phenomena witnessed by the captain and others of the Daedalus. I am too sensible of the inadequacy of the characters which the opportunity of a rapidly passing animal, 'in a long ocean swell,' enabled them to note, for the determination of its species or genus. Giving due credence to the most probably accurate elements of their description, they do little more than guide the zoologist to the class, which, in the present instance, is not that of the serpent or the saurian.

Despite his preconceived determination to show that the animal belongs to a known species, Sir Richard's arguments are ingenious and some of his remarks very sensible. But he then goes on to try to prove that the sea-serpent could not possibly exist without some remains being found, either fossil or fresh. He sets more store by this negative argument, the fallacy of which I have already shown elsewhere, than all the statements by people who claim to have seen the beast with their own eyes. And he ends with this staggering statement:

> A larger body of evidence from eye-witnesses might be got together in proof of ghosts than of the sea-serpent.

Captain M'Quhae was not daunted by the professor, and his reply appeared in *The Times* for 28 November 1848:

> Professor Owen correctly states that I 'evidently saw a large creature moving rapidly through the water very different from anything I had before witnessed, neither a whale, a grampus, a great shark, an alligator, nor any of the larger surface-swimming creatures fallen in with in ordinary voyages'. I now assert—neither was it a common seal nor a sea elephant, its great length and its totally differing physiognomy precluding the possibility of its being a 'Phoca' of any species. The head was flat, and not a 'capacious vaulted cranium'; nor had it 'a stiff inflexible trunk'—a conclusion to which Professor Owen has jumped, most certainly not justified by the simple statement, that 'no portion of the 60 feet seen

> by us was used in propelling it through the water, either by vertical or horizontal undulation'.
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> It is also assumed that the 'calculation of its length was made under a strong preconception of the nature of the beast'; another conclusion quite contrary to the fact. It was not until after the great length was developed by its nearest approach to the ship, and until after that most important point had been duly considered and debated, as well as such could be in the brief space of time allowed for so doing, that it was pronounced to be a serpent by all who saw it, and who are too well accustomed to judge of lengths and breadths of objects in the sea to mistake a real substance and an actual living body, coolly and dispassionately contemplated, at so short a distance too, for the 'eddy caused by the action of the deeper immersed fins and tail of a rapidly moving gigantic seal raising its head above the water', as Professor Owen imagines, in quest of its lost iceberg.
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> The creative powers of the human mind may be very limited. On this occasion they were not called into requisition, my purpose and desire being, throughout, to furnish eminent naturalists, such as the learned Professor, with accurate facts, and not with exaggerated representations, nor with what could by any possibility proceed from optical delusion; and I beg to assure him that old Pontoppidan having clothed his sea-serpent with a mane could not have suggested the idea of ornamenting the creature seen from the *Daedalus* with a similar appendage, for the simple reason that I had never seen his account, or even heard of his sea-serpent, until my arrival in London. Some other solution must therefore be found for the very remarkable coincidence between us in that particular, in order to unravel the mystery.
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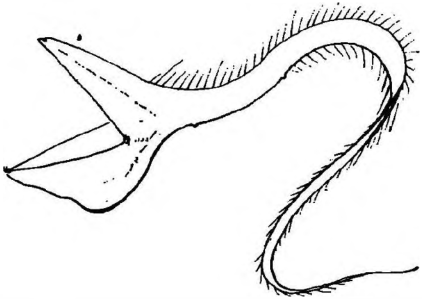
> Finally, I deny the existence of excitement, or the possibility of optical illusion. I adhere to the statement, as to form, colour, and dimensions, contained in my official report to the Admiralty; and I leave them as data whereupon the learned and scientific may exercise the 'pleasures of imagination' until some more fortunate opportunity shall occur of making a closer acquaintance with the 'great unknown'—in the present instance assuredly no ghost.

Though Captain M'Quhae may have put the professor in his place, it is only fair to admit that he did not have all the best of the argument. Sir Richard had no grounds for thinking that the part of the animal that was seen was the whole of its body, and for maintaining that what was an actual estimate of length visible, made by a man practised in judging such lengths, was merely an extrapolated guess. Say what you like, no sea-elephant, even a monster 30 feet long, could show twice that length out of the water! On the other hand it is equally true that the apparently serpentine animal could not have been a true snake as the captain believed. Its method of propulsion and the shape and features of its head entirely contradict this.

But what was it? Here are some of the suggestions made at the time by an anonymous correspondent in an English newspaper. He asks whether it might not be an adult specimen of Dr Mitchill's *Saccopharynx flagellum* or Harwood's *Ophiognathus ampullaceus*, a suggestion which might seem very learned to the common reader until he discovers that these impressive Latin names refer to two closely related abyssal fish, eel-like in shape, but with vast mouths capable of swallowing four times their own weight, and never, so far as we know, exceeding 6 feet in length. The suggestion must have come from an amateur impressed by the strangeness of these fish rather than an experienced zoologist, for they could never be mistaken for the *Daedalus* sea-serpent. The same correspondent, who is certainly catholic in his tastes, goes on to suggest that the monster might be a large land snake that had been driven out to sea. Lansdown Guilding had mentioned in the *Zoological Journal* of December 1827 the case of a big boa-constrictor that reached St Vincent in the Lesser Antilles wound round a floating cedar which was thought to have been carried out to sea from some South American river. St Vincent is 180 miles from the nearest point of the mainland, the *Daedalus* monster was about 300 miles from the coast of Africa, so might it not have been a huge python that had drifted offshore?



41. *Eurypharynx pelecanoides*, a cousin of *Saccopharynx*

Pythons are good swimmers and have swum long distances in African lakes and even in the sea, but I doubt if they could make ocean voyages. They cannot drink salt water and they have no organs of stability, like the laterally flattened tail of the true sea-snakes, to give them control in rough water. Like Owen's sea-elephant abandoned by its melting iceberg, a python might be carried out to sea by a log and be seen as it swam under its own power.

But the *Daedalus* monster did not have a snake's flat and triangular head, despite what Captain M'Quhae says, and certainly not a python's: the pictures approved by those who saw it make this quite clear. Moreover the pythons, the largest of which (*Python reticulatus*) rarely exceeds 30 feet in length, are so conspicuously marked with characteristic mottling that it would be unlikely to pass unnoticed. Finally they swim by horizontal undulation, which the *Daedalus* monster most certainly did not.

Indeed its straight undeviating course without apparent means of propulsion puzzled everyone with any knowledge of anatomy. The contributor to the *Literary Gazette* had already said, 'Had it, then, large fins? There must be some power.' Now a writer signing himself 'F.G.S.' (? Fellow of the Geological Society) in *The Times* drew far bolder conclusions about the *Daedalus* monster.

> One of the greatest difficulties on the face of the narrative and which must be allowed to destroy the analogy of the motions of the so called 'sea-serpent' with those of all known snakes and anguilliform fishes, is that no less than sixty feet of the animal were seen advancing *à fleur d'eau* at the rate of from twelve to fifteen miles an hour, without it being possible to perceive, upon the closest and most attentive inspection, any undulatory motion to which its rapid advance could be ascribed. It need scarcely be observed that neither an eel nor a snake, if either of those animals could swim at all with the neck elevated, could do so without the front part of its body being thrown into undulation by the propulsive efforts of its tail.
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> But, it may be asked, if the animal seen by Captain M'Quhae was not allied to the snakes or to the eels, to what class of animals could it have belonged? To this I would reply, that it appears more likely that the enormous reptile in question was allied to the gigantic Saurians, hitherto believed only to exist in the fossil state, and, among them, to the *Plesiosaurus*.
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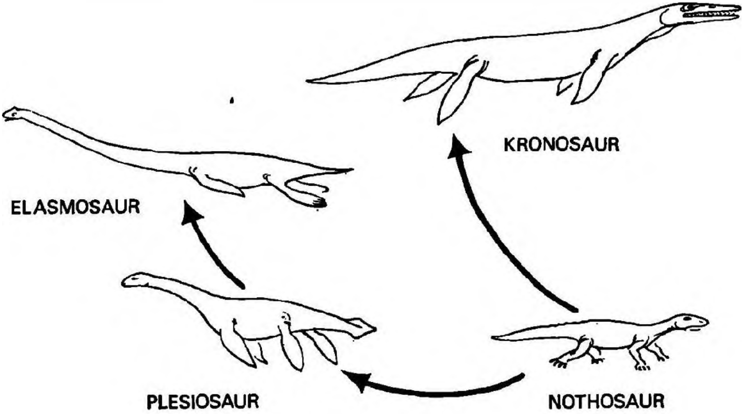
> From the known anatomical characters of the *Plesiosauri*, derived from the examination of their organic remains, geologists are agreed in the inference that those animals carried their necks (which must have resembled the bodies of serpents) above the water, while their progression was effected by large paddles working beneath—the short but stout tail acting the part of a rudder. It would be superfluous to point out how closely the surmises of philosophers resemble, in these particulars, the description of the eye-witnesses of the living animal, as given in the letter and drawings of Captain M'Quhae. In the latter we have many of the external characters of the former, as predicated from the examination of the skeleton. The short head, the serpent-like neck, carried several feet above the water, forcibly recall the idea conceived of the extinct animal; and even the bristly mane in certain parts of the back, so unlike anything found in serpents, has its analogy in the *Iguana*, to which animal the *Plesiosaurus* has been compared by some geologists. But I would most of all insist upon the peculiarity of the animal's progression, which could only have been effected with the evenness, and at the rate described, by an apparatus of fins or paddles, not possessed by serpents, but existing in the highest perfection in the *Plesiosaurus*.

The plesiosaur theory was not new. It had already been put forward by Bakewell, Silliman, Rathke, Newman and Cogswell, and was to be the most popular theory among the sea-serpent's supporters.

The plesiosaur is, of all known animals, the one that best fits the sea-serpent *if we take all the descriptions together*. It had a body like a barrel driven by four strong flippers, a little snake's head on the end of a long thin neck and a fairly powerful tail with, it is thought, a very small diamond-shaped fin in a vertical plane. Apart from having turtle's flippers a plesiosaur looked like a snake that had swallowed a barrel—a huge snake, since some species might be as much as 42 feet long. Unfortunately the barrel has gone down too far and the tail beyond it is less than a fifth of the beast's length (Plate 29). In the sea-serpent on the other hand, at least according to Dr Oudemans, the tail takes up half of the total length.

This feature, which was conspicuous enough in the true plesiosaur (genus *Plesiosaurus*) of the Jurassic, was even more exaggerated in its great-grand-nephew, the elasmosaur of the Cretaceous Period which followed. The elasmosaur had an even longer neck, more than half its total length, but its tail was even shorter (only a seventh of its total length) (Plate 30).



42. Evolutionary tendencies of the Sauropterygia

But otherwise the whole group of marine saurians called Sauropterygia had been evolving in size and length since the beginning of the Mesozoic Era.

The Triassic Nothosaurians are supposed to be the plesiosaur's ancestors. They were little lizards with aquatic leanings and hardly ever more than 3 feet long. In the Jurassic the Plesiosaurians, now clearly adapted to life in the sea, included animals 10 to 15 feet long, and were divided into two principal branches: the Pliosauroids with a short neck but a big elongated head, and the Plesiosauroids which, on the other hand, had a very long neck but a short small head. In the Cretaceous Period towards the end of the

Mesozoic Era the first line reached its summit with the terrifying kronosaur of Queensland with a skull 8 feet 10 inches long out of a total length of 42 feet, while the second line did so with the elasmosaur of Kansas which was about the same length but with a skull less than 10 inches long.

According to Oudemans the great sea-serpent is between 50 and 160 feet long at the most (250 feet say some witnesses, but most estimates are much more modest). The Plesiosaurians never exceeded 42 feet even at the end of the Mesozoic Era. But if they had gone on evolving along the same lines until the present day, might they not have become much bigger and more elongated until they became strikingly like the sea-serpent? This sort of question could hardly arise in 1848, since Lamarck's ideas about the mutation of species were misunderstood and not popular, and Darwin had not yet published his great work. Indeed at this time it was thought that no species of great saurian could survive for the reasons given by Owen in the latter part of his letter about the *Daedalus* monster:

> The sea saurians of the secondary periods of geology have been replaced in the tertiary and actual seas by marine mammals. No remains of *Cetacea* have been found in lias or oolite,[1] and no remains of Plesiosaur, or Ichthyosaur, or any other secondary reptile, have been found in Eocene or later tertiary deposits, or recent, on the actual sea-shores; and that the old air-breathing saurians floated when they died has been shown in the *Geological Transactions* (vol. V., second series, p. 512).[2] The inference that may reasonably be drawn from no recent carcase or fragment of such having ever been discovered, is strengthened by the corresponding absence of any trace of their remains in the tertiary beds.
>
> Now, on weighing the question, whether creatures meriting the name of 'great sea serpent' do exist, or whether any of the gigantic marine saurians of the secondary deposits may have continued to live up to the present time, it seems to me less probable that no part of the carcase of such reptiles should have ever been discovered in a recent or unfossilized state, than that men should have been deceived by a cursory view of a partly submerged and rapidly moving animal, which might only be strange to themselves. In other words, I regard the negative evidence from the utter absence of any of the recent remains of great sea serpents, krakens, or *Enaliosauria*, as stronger against their actual existence, than the positive statements which have hitherto weighed with the public mind in favour of their existence.

Sir Richard's argument, as he himself admits, is founded entirely on *negative* evidence, and he maintains that this is stronger than the positive evidence. In all logic the contrary is true. While the positive evidence of eye-witnesses must be treated with caution and thus has little weight, the negative evidence has none at all.

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[1] Lias deposits cover the first third of the Jurassic, oolite the second two-thirds.

[2] This article is by Owen himself, and Gould has shrewdly observed that 'As a *demonstration*, of anything more than the author's complacency, it is of no value'.

It is perfectly true that nobody, even after Owen's time, has found in geological layers later than the upper Cretaceous (i.e. less than seventy million years old) any fossil remains of several great groups of saurians such as the Dinosauria, Ichthyosauria and Sauropterygia. But this means no more than that these groups became much less common in the Neozoic Era. Fossilization is always the result of an accident, of the combination of fairly unusual circumstances, and fossils are likewise discovered largely by chance. The least likely to be disinterred are those of animals that live in the ocean, since this can only happen if large land masses emerge from the sea.

We have had many occasions to see how little Professor Owen's negative proof means. There are now 'living fossils' from groups characteristic of all geological eras, as I have shown in Chapter Three of *On the Track of Unknown Animals*. The great Swiss-American naturalist, Louis Agassiz, who firmly believed in the sea-serpent, explained in a lecture at Philadelphia on 20 March 1849 why he would not be surprised to find a living plesiosaur. He had noticed that very often forms of life found only as fossils in the Old World were living in the New: for instance the Snapping Turtle (*Chelydra serpentina*), the huge frogs and salamanders of the United States and those monstrous fish of Western rivers, the Gar-pikes (*Lepisosteus*). At the time when these gar-pikes still lived in Europe, plesiosaurs and ichthyosaurs still swam in the coastal waters, and swimming with them were sharks with grinding teeth, of which a species still survives in Australia, the Port Jackson Shark or Phillipe's Cestracion. The various continents had not undergone the same geological changes, and they could thus be considered as of different ages. This was why fauna were not equally ancient everywhere. Animals of all periods could be contemporary.

Thus, even in Owen's day, another equally eminent scientist could take a diametrically opposite view.

Very diverse theories have been put forward to explain the apparently total disappearance of several big groups of reptiles of the Mesozoic Era. All have their weak points, for, whatever reason is given, it is hard to see why it should not have applied equally to the other no less ancient related groups like the crocodiles and tortoises. Explanations based on changes of climate are most generally accepted. But it is clear that sea-animals are least affected by such changes, since conditions in the ocean have altered little in geological times. The upper layers of water have undergone slow variations in temperature from which only fixed or non-migrant organisms would have suffered. When there were changes in climate, even violent ones, migratory animals—or ones capable of long journeys—could easily find other places that suited them better.

Now we know for certain, as a result of a subtle piece of detection, that the plesiosaurs did migrate. Among their fossil remains we often find large polished rounded stones. It was long thought that, as they had no molars to chew their food, they swallowed these stones to act like those in a bird's crop. Crocodiles share this habit with plesiosaurs, and Dr Hugh Cott, who has studied them in Uganda, has shown that crocodiles really swallow stones to ballast themselves and make it easier for them to dive, just as a frogman wears a lead belt. This, incidentally, proves that sauropterygians would sink as soon as they died. Now among the remains of a plesiosaur excavated in Kansas were stones which according to the geologists could only come from North Dakota, thus showing that when the sea covered those states it must have made a journey of well over 600 miles. A creature that was given to such journeys could travel all over the world and would not be at the mercy of a gradual change of climate; and in the sea a violent change of climate would not have the dire effect it had on land, for the sea retains its temperature for longer than the air and more than 10 or 20 fathoms down is hardly affected by conditions on the surface.

It therefore seems as if there were no single cause which mercilessly destroyed all of certain orders of reptiles of the Mesozoic Era. No doubt, like all the zoological groups, after a long period of expansion they simply fell into a natural decline, and their ranks gradually thinned out until they were on the road to extinction. Their end may have been hastened by unfavourable climatic changes at the end of the Mesozoic Era. But, like many once numerous groups, they could have left survivors, and among the large marine species the chances of survival would be greatest.

If some kinds of plesiosaurs have survived until today, they could have done so without our knowledge, as other large marine animals thought to have been extinct for tens and even hundreds of millions of years have now been conclusively shown to have done.

Sir Richard Owen was particularly unfortunate in using 'the utter absence of any of the recent remains' of *krakens* as a proof of their non-existence. No zoologist now doubts that they do exist, as I have shown in Chapter Two. By a strange irony Owen himself was in 1846 one of the first to describe a huge tentacle of the *kraken* which had long been pickled in a jar in the British Museum, but such were his preconceived notions that it did not occur to him that it might belong to the monster of Norse legend.

If by chance it turns out that the sea-serpent—or one of the animals going under that name—is really a cetacean of the genus *Zeuglodon* as Schleiden seems to have suggested, we shall find that it was the scientist most bitterly opposed to the sea-serpent who gave it its usual Latin name after realizing that it must be a mammal, for it was Owen who in 1839 first showed that the fossil which Harlan had called *Basilosaurus* was really a cetacean, which he proposed to call *Zeuglodon*.

The whole story of the sea-serpent sometimes seems to have been invented by an unusually mischievous imp. For when at last the problem is solved we may well find that those who believed most firmly in the beast were quite mistaken about what it was, while those who did not believe in it ought to have been able to guess its nature. Perhaps the problem would have been solved sooner had these antagonists been less blind. Thus in the *Daedalus* affair we have Captain M'Quhae, who was no zoologist but had to believe his own eyes, and Professor Owen, an expert anatomist who had not seen the animal but could interpret it. The captain saw an elongated animal at least 60 feet long which seemed to him to be a serpent. The professor said that from the descriptions and drawings the animal was more like a mammal; and as the largest sea mammal with a thin neck that he knew was the sea-elephant, it *must* be one, and the size *must* have been exaggerated by the witnesses.

Can we not reconcile these points of view? Surely it follows that the men on the *Daedalus* saw a serpentine animal some 60 feet which belonged to the class of mammals, and as we know of no such mammal it must be one unknown to science. This conclusion was to be drawn almost simultaneously in the 1880s by an English amateur naturalist and a Dutch zoologist. But until then opinion fell into two irreconcilable camps. In one were the unbelievers who said that all the reports were due to hoaxes, optical illusions, mass hallucination or known animals badly observed; the only disagreement was about which known animal it had been. In the other camp there was complete agreement that the sea-serpent must be a great saurian thought to be extinct, probably related to the plesiosaur.

The quantity and the novelty of the sensational discoveries then being made about the great reptiles of the Mesozoic Era largely explain the remarkable popularity of this view, moreover there is no doubt that the reconstructions of some fossil saurians are remarkably like the descriptions that witnesses have given of the sea-serpent. The similarity is particularly striking in a report which Edward Newman published in the *Zoologist* of February 1849:

> ENORMOUS UNDESCRIBED ANIMAL, APPARENTLY ALLIED TO THE ENALIOSAURI, SEEN IN THE GULF OF CALIFORNIA.
>
> Captain the Hon. George Hope states that, when in H.M.S. Fly, in the gulf of California,[1] the sea being perfectly calm and transparent, he saw at the bottom a large marine animal, with the head and general figure of the alligator, except that the neck was much longer, and that instead of legs the creature had four large flappers, somewhat like those of turtles, the anterior pair being larger than the posterior: the creature was distinctly visible, and all its movements could be observed with ease: it appeared to be pursuing its prey at the bottom of the sea: its movements

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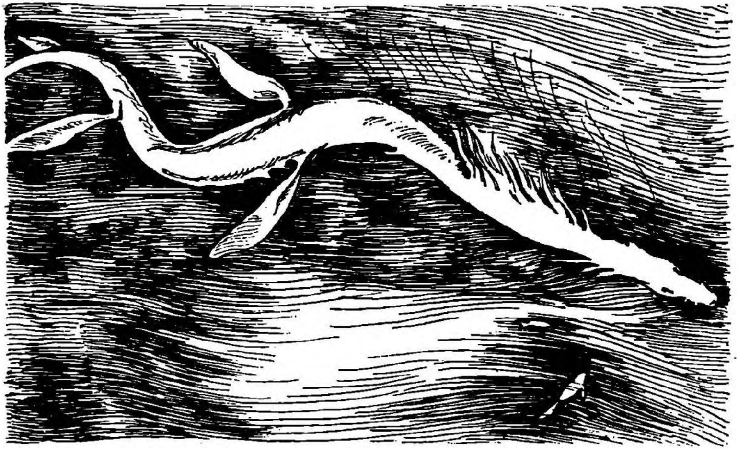
[1] R. T. Gould, who tried to check this story, found that between 1836 and 1840, Hope served as a Lieutenant in H.M.S. *Fly*, and that she was often in the Gulf of California during this period.

> were somewhat serpentine, and an appearance of annulations or ring-like divisions of the body was distinctly perceptible.

If such a beast were to swim on the surface might it not sometimes look like a serpent because of its long neck and sometimes like a string of little humps because of its 'annulations'? These incidentally are extremely odd in a creature that is a quadruped and therefore a vertebrate. At first sight they are a feature peculiar to invertebrates, primitive molluscs, worms and arthropods. But nobody remarked on this oddity at the time or tried to explain it. No doubt the unbelievers found it one more reason for unbelief and the partisans of the plesiosaur overlooked it, since the rest of the description seemed to confirm their view. Yet the story is only a tale at second-hand which does not even give a guess at the size of the animal, and Newman does not seem to have been able to get confirmation or more details from Hope himself. He writes:

> Captain Hope made this relation in company, and as a matter of conversation: when I heard it from the gentleman to whom it was narrated, I inquired whether Captain Hope was acquainted with those remarkable fossil animals, Ichthyosauri and Plesiosauri, the supposed forms of which so nearly correspond with what he describes as having seen alive, and I cannot find that he had heard of them; the alligator being the only animal he mentioned as bearing a partial similarity to the one in question.



43. The *Fly* sea-serpent, after Carton Moore Park's drawing in the *Pall Mall Magazine*

Nor was this all, when Newman came to review the events of 1849 he boldly said,

> I have been favoured with a communication, announcing the present existence of huge marine animals closely related to the Enaliosauri of by-gone ages, that appears to me in all respects the most interesting Natural-History fact of the present century, completely overturning as it does some of the most favourite and fashionable hypotheses of geological science.

This is going pretty far on the strength of a vague and unconfirmed report. But, after all the humiliations the partisans of the sea-serpent had undergone, it is pleasant to see their confidence unshaken as they attempt to overturn a science which had already begun to fossilize.

8

Her Majesty's Sea-Serpents

(British Period, Part One, 1848-1870)

Confining myself to *English* witnesses of known character and position, most of them being officers under the crown, I have adduced the following testimonies . . .

PHILIP HENRY GOSSE in *The Romance of Natural History*

FROM 1850 to 1890 we suddenly find that, instead of coming from America or Norway, two-thirds of the sea-serpents come from British sources. I do not think this is just because this was the period, perhaps more than any other, at which Britannia ruled the waves. The highly respectable *Daedalus* report of 1848 had changed public opinion in Britain and created an honourable precedent for those who had sightings to report, even though the official view in some scientific quarters remained unchanged. Professor Owen may even have helped unintentionally, for by casting doubt on the powers of observation of Captain M'Quhae and his crew he probably encouraged other naval men to support their brother officers against his unjust attacks. The history of the sea-serpent can be divided into periods attached to particular nations not because it frequents particular territorial waters at a particular time—as in the absurd legend of there being but one single monster—but merely because one particular nation was unusually interested in sea-serpents at the time because of an unusually notable appearance.

The British period, all of which fell in Queen Victoria's reign, was of prime importance to the sea-serpent's reputation. The British were then in the heyday of their reputation for phlegm and a 'stiff upper lip', and we find that the reports during this period, though no more frequent than in the previous half-century, are more detailed and more circumstantial,[1] they are usually more sober, and they often have better guarantees of their authenticity. The list of witnesses often reads like the pages of *Who's Who*. The sea-serpent seemed at last to have a fair wind and to be rising in public, and particularly in scientific, estimation which reached its summit in the monumental monograph which a Dutch zoologist, Dr Oudemans, published about it in 1892. For this reason I have decided to end Part Two of this fertile period with the previous year, 1891.

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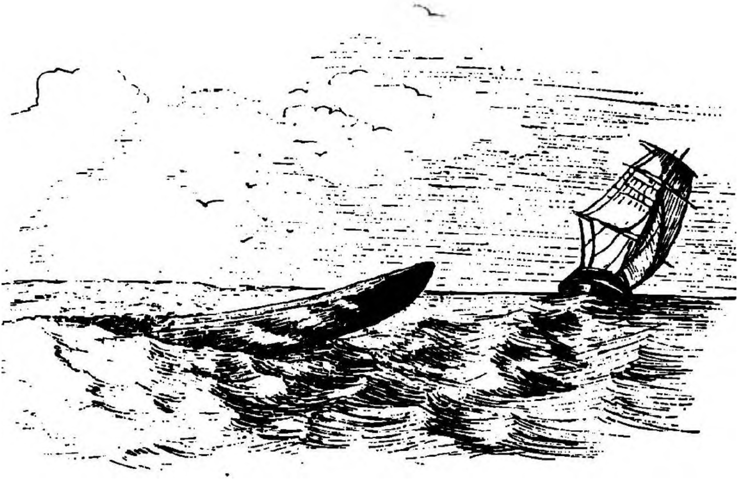
[1] There are, of course a few exceptions to prove this rule. We have no details of the sea-serpents seen by Commander Nolloth, R.N., off Portugal in March 1849 and by a Lamport and Holt captain near St Helena around 1856, nor of several others perforce marked with a '?' in the Chronological Table.

A report from an officer of H.M.S. *Plumper*, who was persuaded to write to the *Illustrated London News* on 10 April 1849, no doubt as a result of the *Daedalus* controversy, demonstrates how one serious report elicits another and gives a good idea of the sober, indeed dry, tone of many witnesses of this period:

> On the morning of the 31st December, 1848, in lat. 41° 13′ N. and long. 12° 31′ W., being nearly due west of Oporto, I saw a long black creature with a sharp head, moving slowly, I should think about two knots, through the water, in the north westerly direction, there being a fresh breeze at the time, and some sea on. I could not ascertain its exact length, but its back was about twenty feet if not more above water; and its head, as near as I could judge, from six to eight. I had not time to make a closer observation, as the ship was going six knots through the water, her head E. half S., and wind S.S.E.
>
> The creature moved across our wake towards a merchant barque on our lee-



44. The *Plumper* sea-serpent, 1848, after one of her officers

> quarter, and on the port tack. I was in hopes she would have seen it also. The officers and men who saw it, and who have served in parts of the world adjacent to whale and seal fisheries, and have seen them in the water, declare they have neither seen nor heard of any creature bearing the slightest resemblance to the one we saw.
>
> There was something on its back that appeared like a mane, and, as it moved through the water, kept washing about; but before I could examine it more closely, it was too far astern.

The letter was signed 'A Naval Officer'. Eighty years later Commander Gould was able to confirm from the *Plumper*'s log that she was in the position given and that a merchant ship had been sighted on the correct bearing. But there was no mention of the unknown animal. The report, however, seems genuine enough, though not very informative, and the illustration which accompanies it is still less so. Engraved after the officer's sketch, it shows an animal as stiff as a log of wood, but this is no reason for gibes at his expense, for he would certainly not have taken a lifeless log for a living animal, and did not Aristotle talk of animals 'like beams of wood'?

The *Daedalus* affair had other less fortunate effects. Well-intentioned witnesses and naturalists anxious to solve the mystery introduced other evidence which had little or nothing to do with the sea-serpent. This is what Dr Oudemans did with an extract from the private log of Captain Edwards of the *Alpha* about a monster seen in the rather out-of-the-way waters of the Indian Ocean south of Australia.

> Wednesday, May 30, P.M., strong breezes at N.N.W., and a sharp sea on; about 1.15 I felt a strange shaking of the ship. Mr. Thomson, my chief officer, Mr. George Park, civil engineer, cabin passenger on board, ran on deck as well as myself, when we beheld immediately under our lee quarter a monster of huge dimensions. It had no fins or broad tail, as whales have. It was of a light fawn colour, with large brown spots behind the shoulders; the head pointed like that of a porpoise. It had large glossy eyes; the shoulder was much darker than the rest of the body, which was the thickest part of it, (say twenty feet in diameter), from thence diminishing to the tail, to about the size of our mainyard in the slings (say twenty-four inches diameter). He took a turn round, and we afterwards saw him astern, and he went away in a S.E. by S. direction, at about thirty miles an hour.

This creature does not look in the least like a serpent. We do not know its length, only its remarkable width, which is as great as, if not greater than, that of the biggest whales—and twice as much as that of the most fantastic sea-serpents. One feels that it must be exaggerated unless there is some unusual explanation.

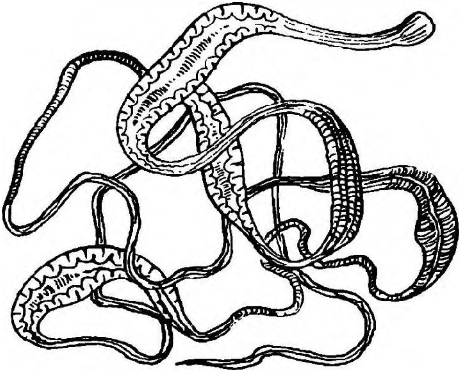
Since Captain Edwards said there was no 'broad tail', presumably it ended in a point. The only big fishes with pointed tails are the giant rays. If Captain Edward's ship had run into one lying near the surface, would this not explain the great width at the shoulders? For the biggest rays, like the Manta or Greater Devil-fish (*Manta birostris*), and the Mobula or Lesser Devil-fish, may be 20 feet wide or even more. Admittedly these rays do not have a 'head pointed like that of a porpoise': in the manta the front of the body ends in a gaping mouth like a racing car's radiator with a cephalic fin like a horn on each side; in the mobula the mouth is under the head, which is horned and almost as large. But it was probably the horns which were mistaken for a pointed head, since, as Dr Russell Coles has observed, mobulas are in the habit of keeping these fins twisted together into a point. The two known types of giant rays are brown in colour, and darken with age. If the *Alpha* monster, which was 'of a light fawn colour, with large brown spots' belonged to one of these genera it was of an unknown species.

This identification may not be absolutely certain, but it seems to me far better than Dr Oudemans's, when he put the creature in the same species as the sea-serpents seen in Norway and New England.

I believe that, in cryptozoological research, whenever a sea-monster can possibly be explained as a known animal it should be immediately eliminated.

With a well-known creature it is, of course, easier. Thus in 1849 the *Montrose Standard* reported how some fishermen of Usan brought 'a young sea-serpent' to the secretary of the local museum:

> The animal, whatever it may be called, is still alive, and we have just been favoured with a sight of it; but whether it really be a young sea-serpent or not, we shall leave those who are better acquainted with Zoology than we are to determine. Be it what it may, it is a living creature, more than 20 feet in length, less than an inch in circumference, and of a dark brown chocolate colour. When at



45. *Lineus longissimus*

> rest its body is round; but when it is handled it contracts upon itself, and assumes a flattish form. When not disturbed its motions are slow; but when taken out of the water and extended, it contracts like what a long cord of caoutchouc would do, and folds itself up in spiral form, and soon begins to secrete a whitish mucous from the skin, which cements the folds together, as for the purpose of binding the creature into the least possible dimensions.

Edward Newman reprinted the extract in the *Zoologist,* adding: 'This creature was probably a specimen of *Gordius marinus*'—not, as Dr Oudemans has pointed out, the small intestinal parasite so named by Linnaeus, but a nemertean worm so described by Montagu and more correctly named *Lineus longissimus.* It is the longest of marine worms and is so fantastically elastic that it can quadruple its length in a few seconds: a very large specimen can stretch to 100 feet in length, but it would not be more than a fifth of an inch thick. It is easier to imagine this living Gordian knot being mistaken for a bunch of spaghetti in chocolate sauce than for a sea-serpent, however young.

The fact that animals as different as a worm and a giant ray could both be described as sea-serpents only adds to the complexity of our problem.

Besides the mistakes due to ignorance and the deliberate hoaxes there is a class of error half-way between, in which a commonplace phenomenon is misunderstood and misinterpreted, perhaps because it has been observed in unusual circumstances.

Frank Buckland quotes from the *Pall Mall Gazette* a fantastic account of the sea-serpent which Captain Slocum and the crew of the American schooner *Saladin* saw in the Caribbean on 12 March 1870:

> It is described as being 100 feet in length, its body measuring forty and its tail sixty feet. The most curious feature about it was an immense body of hard gristly matter, twelve feet in height, forty feet in width, with the same length, entirely void within, forming a large bladder-shaped balloon, which, filled with air, buoyed the serpent on the water. This oval buoy had regular ridges, running from the apex or head (for this bladder preceded the body of the fish) to where it joined the main body. These ridges extend fore and aft at intervals of four inches, with a regular height of two inches, and gave to the surface the appearance of the network of a balloon. The bladder portion was elastic and yielded to the movements of the sea; it was two inches thick, but of a hard, dense, impenetrable character, and would resist knife or bullet. On each side of this floating dome were two heavy paddles, each five feet long, by which the monster made progress. The fish proper, which was but an appendage tailed on to this blown-up bladder, consisted of a heavy fishy substance, with brown sides; and about ten feet from the dome were two eyes, one on either side of a large horn. From this point the fish tapered on to a forked tail of material as heavy and hard as iron. Captain Slocum declares that the tail would weigh 100lb. to the cubic foot, and the forks of the tail stood horizontally in the water, but submerged four feet, the rest of the monster 'sitting lightly on the ocean wave'.

The creature described thus is quite incomprehensible, and Frank Buckland, very much an anti-sea-serpent man, has a lot of fun at the expense of the captain's imagination. But in fact he seems to have reported pretty accurately what he saw. It was just that neither he, nor even such an expert on marine animals as Buckland, dreamt that the animal might be dead or dying and floating belly upwards. As soon as we look at it this way a rorqual or balaenopterous whale springs to mind, with its throat so characteristically furrowed, if it is swollen by putrefaction or perhaps even some digestive trouble (see Plate 36). All is explained: the size of the beast, the position of the flippers, the shape of the tail. Even the 'horn' between 'eyes' is easily explained as the penis sticking out between the thick lips, often fringed with parasites, which enclose the natural orifices.

It may seem odd to us that such a familiar sight as a dead rorqual should not be recognized. But in those days they were rarely seen. Only right whales and sperm-whales were hunted, for the big blue whale and the other rorquals were too dangerous until Svend Foyn perfected the harpoon-gun at the end of the last century, and the technique of inflating the carcase to prevent it from sinking was devised. How many other monsters must have been born from equally accurate but misinterpreted accounts!

There was a repetition of the *Saladin* affair on 5 June 1880 when Captain M. D. Ingalls and the crew of the *Chalcedony* saw what he thought was 'the original sea-serpent' near Monhegan Island off Maine:

> It was dead, and floated on the water, with its belly, of a dirty brown color, up. Its head was at least 20 feet long, and about 10 feet through at the thickest point. About midway of the body, which was, I should guess, about 40 feet long, were two fins, of a clear white, each about 12 feet in length. The body seemed to taper from the back of the head down to the size of a small log, distinct from the whale tribe, as the end had nothing that looked like a fluke. The shape of the creature's head was more like a tierce than anything I can liken it to. I have seen almost all kinds of shapes that can be found in these waters, but never saw the like of this before.

No doubt Captain Ingalls, like Captain Slocum, had never before seen a partly decomposed whale floating belly up with its tail flukes eaten or rotted away. The men 'got on this dead creature, and one of the boys cut a double-shuffle on its belly'—which was perhaps all the consideration the would-be sea-serpent deserved.

Another unfortunate result of the *Daedalus* affair was the large crop of sensational hoaxes during the British period. Dr Oudemans counted twenty certain hoaxes during this half-century, an average of one every two or three years. This is far more than the usual rate, for during the last 200 years I have found only fifty-six altogether, though there may have been more. We are a long way from the popular belief that journalists short of copy invent one each summer. It is quite true that 60 per cent of all the sightings took place in summer—and there are good reasons for this. But, of the forty hoaxes in which the date of the event is given, only sixteen, or 40 per cent, happened in summer. Journalists, it seems, are therefore more likely to invent sea-serpents *outside the holiday season*!

Few of these hoaxes were originated by Englishmen or Scots. Most were American, there were a few from France, and half a dozen invented by journalists in Ireland, a peculiarly Irish way perhaps of ridiculing the Royal Navy and campaigning for Home Rule.

Let us take a sample of obvious hoaxes from the whole British period (1848–91) and deal with them out of chronology here so as to get them out of the way once and for all, and thus simplify the main story, which is complicated enough as it is. The reader will find imaginary sea-serpents very easy to recognize. The extravagant details of the anatomy and the dramatic adventures in which they appear make them suspect at once. And as to the witnesses, ships, carcases and trophies, 'these our actors ... are melted into air, into thin air' as soon as one begins to investigate. We do not need Prospero to tell us they were only 'revels' for our amusement.

On 15 March 1850, according to the *Christian Mercury*, a 150-foot sea-serpent was seen in Port Royal Sound in South Carolina. It swam up Broad River and was stranded at the mouth of Skull Creek near Beaufort, after having been mercilessly pursued for many miles with rifle-fire and cannons—and presumably with an atomic disintegrator-gun, since the body was never examined.

The same thing must have happened to the Irish monster which, from 28 August to 25 September 1850, first left its moulted skin on a sea-mark, and then was caught and killed at Youghal in County Cork, having spewed up shoals of little fish, which 'being handled, gave the crew the most terrific electric shocks'. It, too, vanished.

In 1858 another sea-serpent swam for nine days alongside the Dutch ship *Hendrik Ido Ambacht* showering her with a pestilential fluid and shaking the hull with blows of its tail. Unfortunately the ship's position when this adventure began was latitude 27° 27′ N., longitude 14° 51′ E.—in the middle of the Libyan Desert.

Another specimen of this kind was even more remarkable in its geography, appearing in latitude 12° 7′ *East* and longitude 93° 52′ *South*! It had attacked the *British Banner* on 25 April 1859, and was the most voracious ever known. The monster began by 'shaking the bowsprit with his mouth' and finally 'swallowed the foretopmast staysail and flying jib with the greatest apparent ease; he also snapped the thickest of the rigging asunder like a thread'. Then it stove in the starboard quarter galley and was seen no more, but a young one was caught in the afternoon. This at least was the tale Captain William Taylor told. He added that the baby monster had been given to the Museum at Melbourne. This, the Museum confirmed, was an adult *Pelamis bicolor*—a true sea-snake. But one tooth of the big monster would have been more convincing.

In the following year we find the *Skibbereen Eagle* describing an Irish sea-serpent with 'brilliant scales of a yellow hue'. The witnesses appear to be very respectable and include a justice of peace and a professor. But this all took place in 'Whitehall Harbour', and Whitehall is twenty miles inland in Kilkenny and far from any large stretch of water.

I don't think I need give reasons for disbelieving Mr J. Cobbin of Durban when he describes his third sea-serpent, which he saw from the *Silvery Wave* on 30 December 1871:

> He was at least one thousand yards long, of which about one third appeared on the surface of the water at every stroke of his enormous fan-shaped tail, with which he propelled himself, raising it high above the waves, and arching his back like a land-snake or a caterpillar. In shape and proportion he much resembled the cobra, being marked by the same knotty and swollen protuberance at the back of the head on the neck. The latter was the thickest part of the serpent. His head was like a bull's in shape, his eyes large and glowing, his ears had circular tips and were level with his eyes, and his head was surrounded by a horny crest, which he erected and depressed at pleasure. He swam with great rapidity and lashed the sea into a foam, like breakers dashing over jagged rocks. The sun shone brightly upon him; and with a good glass I saw his overlapping scales open and shut with every arch of his sinuous back coloured like the rainbow.

A sadder note is struck by Captain Larsen, whose ship the *Columbia* struck a sea-serpent on 4 September 1879, while on a voyage between London and Quebec. The serpent bled freely, the ship sank.

French hoaxers took a more facetious line. On 8 October 1881 *Le Monde Illustré* printed a letter from C. Renard about a sea-serpent seen the previous 10 August by several passengers on the *Don*, a steamer of the Royal Mail Steam Packet Company. There was a cautionary editorial note:

> We leave to the author of the letter which follows and of the sketch which was enclosed all responsibility for a statement which seems to us strange, to say the least, and which, of course, we offer to our reader with every reserve.

In fact the letter is barely disguised buffoonery from start to finish. Here are a few extracts:

> From the bottom of the throat where there was a sort of swelling, emerged a rigid pointed tongue, garnished with what seemed to be suckers and shining with reflections which were at once blue as steel and phosphorescent as the sea at

> certain times; the eye was round, very luminous, very mobile and seemed to be endowed with the faculty of seeing backwards, so rapid and well-coordinated were the animal's evolutions.

And even more facetiously:

> It gave off an odour as fetid as that of a sick creature; this odour, which persisted more than half an hour seemed to be the result of a great combined operation of the house of Lesage, of the heat of the main sewer at Asnières, and half a dozen bone-black factories like those at Billancourt. It would need the shops of several of our best perfumers put together to counteract it.
>
> The monster seemed to be old, as much because of its size as the colour and roughness of its integument.
>
> This is not the first time such creatures have been seen. The first time it was seen was in 1847 by the Portuguese ship *Ville de Lisbonne*, Captain Juan Alphonso Zarco y Capeda. This date coincides with the *Charivari's* jokes about the *Constitutionnel* and the first outbreak of potato-disease.

And as a last snook cocked at the reader, the position was latitude 29° 60′ N., longitude 42° 40′. 29° 60′ looks very professional, but a navigator would have made it 30° and been done with it. The accompanying picture is one of the most fanciful that has ever been drawn, it has, moreover, been reproduced, in France at least, more than any other, which has not done the sea-serpent's reputation much good.

The monster which attacked the fishing-boat *Bertie* off Fetlar in the Shetlands on 18 May 1882 was also an obvious hoax. It was 150 feet long and its head was covered with barnacles 'the size of herring barrels' and with 'whiskers hanging down around its mouth and seemingly about seven or eight feet long, of a pretty green colour'.[1] The skipper of the boat which was almost swallowed by the monster ('of course, with the mast laid') is no more plausible in the rest of his account. How, asks Arthur Stradling in *Land and Water*, was the *Bertie* able to get away from the monster which pursued it for three hours? And he adds:

> Does the marine ornithology of the Shetlands abound with such *raræ aves* as fishing-boat skippers who talk about scenes that 'baffle description' (twice), who call their boat a 'frail craft', and a sea monster 'an unwelcome visitor', and nice things of that sort, and who indulge in such expressions as 'an order not long in being executed,' 'I candidly confess,' and other high class conversation? Why it beats the sea-serpent hollow!

The whale-ship *Alaska* went one better, according to the *San Francisco Chronicle*. She harpooned a sea-serpent on 16 October 1884 and with much difficulty hauled it on deck.

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[1] A correspondent in Tim Dinsdale's *The Leviathans* (1966) gives a much more matter-of-fact description, but with no indication of its origin.

> There the capture was seen to be a villainous-looking thing. Its head closely resembled that of an alligator, while the body resembled that of a lizard. It measured 33 feet in length, the tail being nine feet long. The tail was cut off and stuffed, and brought to this city, and is now on exhibition.

What the exhibited tail really was I do not know. But certainly if they had wanted proof of capturing a reptile too big to bring back whole (which this one wasn't) they would have chosen something more impressive than the tail.

In 1887 several newspapers reported that on 11 October 1886 the schooner *Hattie F. Walker* had caught a sea-serpent on the Newfoundland Banks and brought it back whole. It was then stuffed and displayed on Peake Island, Portland. It was said to be 47 feet 3 inches long and to weigh 700 pounds—less than half of what a python would weigh if it were the same length and kept its usual proportions. But inquiries about it were unanswered and reduced its weight to nothing, especially as it was odd that the fisherman did not give their trophy to P. T. Barnum in exchange for the $20,000 reward that he had recently offered.

There was also the sea-serpent which was seen sleeping peacefully in Georgetown Harbour in British Guiana on 20 August 1888;[1] the one which amused itself in the same year by chasing the boats of natives of St John's, Newfoundland; and the one seen on 22 September 1891 by fishermen of Peterhead in Scotland, rising 300 feet above the waves with teeth as long as four men standing upon one another's shoulders.

The reader will have seen for himself that, as I argued in the first chapter, a hoax is not difficult to recognize. This is intentional. It almost always contains some jest or gross error designed to make fun of those foolish enough to be taken in by it.

By far the finest hoax was the story of the *Monongahela*. The letter which purported to be written by her master, Captain Seabury, gives itself away by being too vivid, dramatic and well-written. If it were not some 2,700 words long I should like to quote the whole of it.

On the morning of 13 January 1852, when in latitude 3° 10′ S. and longitude 131° 50′ W. the look-out saw 'white water' two points on the lee bow. When the ship came nearer the captain's attention was called to the shouts of Onnetu Vanjau, a Marquesan islander. 'Oh! look! look! Me see!—too much—too much!' In reply to the captain's question he explained, 'No whale—too much—too big—too long. Me no see all same dat fellar—me fraid.'

A few moments later the captain himself saw 'the strangest creature I had ever seen in the ocean'. There follows a traditional description of the great sea-serpent, undulating up and down and raising its head above the water—the first of its kind to be seen in the tropical Pacific.

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[1] The date is as doubtful as the sea-serpent, since I have not been able to find the original report. The issue of *Chambers' Journal* cited by Dr Oudemans mentions Georgetown but no sea-serpent.

The captain ordered them to stand by the boats, but the men hesitated and the mate said, 'Of what use is there lowering for him?'

> I urged them with all the eloquence I possessed, telling them there were but few who believed in the existence of a sea-serpent, and that a wish had been expressed that a whale ship might fall in with one of them—that if we did not attack him, and should tell of seeing him when we got home, we should be laughed at and derided—and the very first question would be: 'Why didn't you try him?' I told them our courage was at stake—our manhood, and even the credit of the whole American whale fishery, and concluded by appealing to their cupidity—holding out that we might possibly get him into some southern port. 'I do not order one of you to go in the boats,' I said, 'but who will volunteer?' Let me say to their credit, every American in the ship stepped out at once, followed by all but one native and two Englishmen.[1]

After a long chase they managed to harpoon the monster, which went into terrible convulsions.

> The frightfulness of the head as it approached the boat filled the crew with terror, and three of them jumped over board. I instinctively held out my lance, and its sharp point entered the eye. I was knocked over and felt a deep churning of the water around me.

When the brave captain and the terrified sailors had been picked up they found that the 'snake' had sounded—mortally wounded and with several harpoons in its body. After sixteen dramatic hours, throughout which they feared that the irons would be drawn out at any moment by the violence of the beast, the line went slack and the monster appeared on the surface, where it died in agony to the cheers of the crew.

> It was a male; the length 103 feet 7 inches; 19 feet 1 inch around the neck; 24 feet 6 inches around the shoulders; and the largest part of the body, which appeared somewhat distended, 49 feet 4 inches.

These improbably exact measurements are followed by a description of an ordinary snake of vast size. There are even some anatomical details characteristic of snakes: 'The bones of the lower jaw are separate ... One of the serpent's lungs was three feet longer than the other.' All the same it was no ordinary snake.

> On examining the skin we found, to our surprise, that the body was covered with blubber, like that of a whale, but it was only four inches thick. The oil was clear

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[1] Note this gibe, significant perhaps of Anglo-American relations at that time, and in keeping with the captain's earlier remarks about 'the credit of the whole American whale fishery'.

> as water, and burnt nearly as fast as spirits of turpentine. We cut the snake up, but found great difficulty, and had to 'flense' him, the body would not roll, and the blubber was so very elastic, that when stretched 20 feet by the blocks, it would, when cut off, shrink to 5 or 6 feet.

The bones were carefully cleaned.

> The heart I was enabled to preserve in liquor, and one of the eyes, but the head, notwithstanding it is cool, begins to emit an offensive odour; but I am so near the coast now that I shall hold on to it as it is; unless it is likely to breed a distemper.

On 6 February the *Monongahela* met another ship apparently bound for 'northern parts'.

> I have just spoken the vessel; she proves to be the brig Gipsy, Captain Sturges, eight days from Ponce, P.R., with oranges and merchandise, bound to Bridgeport.[1] He has kindly offered to put these sheets in the post office when he arrives. As soon as I get in I shall be enabled to furnish you a more detailed account.—I am, Sir, your obedient servant, Charles Seabury, Master, Whale-Ship Monongahela, of New Bedford.

No more detailed account ever appeared. If there is still any doubt that this is a complete hoax it is set at rest by Robert von Froriep in his *Tagsberichte*:

> As it was supposed, we learn from a communication of the *Philadelphia Bulletin* that the story of the capture of the Sea-Serpent is a fiction. The crew that was said by the *New York Tribune* to have met with the ship of Captain Seabury in the open sea and to have taken home the report, has declared, that it has nowhere met with a ship *Monongahela*, Captain Seabury.

All the same there *was* a *Monongahela*, Captain *Jason* Seabury. Photographs of part of her stern and a portrait of her master were published in *MD* in September 1960, and I understand that they are in the Old Dartmouth Historical Museum at New Bedford, Massachusetts, though I have not confirmed this. Meanwhile Tim Dinsdale in *The Leviathans* (1966) cites another less sensational version, of a later date but showing signs that this fantastic hoax may after all have had a germ of fact. To unravel the whole confused story would require much more time and careful research than I have been able to give it.

Besides the inventions and the mistakes, there are also some accounts that it is hard to know what to make of, either because they are written in such awkward or high-flown language that they are hard to understand, or because there is something fishy about them without one being able to say confidently that they are frauds.

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[1] It is strange how hoaxers fall down on their navigation. The shortest route from the position north-east of the Marquesas where the sea-serpent was sighted round the Horn to a reasonable rendezvous with a ship sailing from Porto Rico to Connecticut is about 10,000 miles. Captain Seabury would have had to sail at 17 knots night and day to get there in time.

There is, for instance, the report of a Frenchman called Joannis Morgon who wrote, under the absurd *nom-de-plume* of Yvastock O'Park, *Échos d'outre-mer*, poems dedicated to Pope Pius IX. The publisher, C. Vanier, in an advertisement to this literary oddity, quoted an even odder letter from the author:

> On 8 March 1854, at 2 o'clock in the afternoon, in the anchorage at Singapore, on the Equator, in 100° longitude, I saw, some 2 yards from the Bordeaux clipper *Benjamin*, on which M. Alexandre Basilewski, a Russian diplomat, of St Petersburg, had navigated from Hong-Kong to Singapore, and I was the first to be able to draw the attention of the crew of this new three-master, remarkable for her new lines and internal ironwork, to the presence of this phenomenal ophidian. It seemed to us to be about 55 feet in length: it had a great resemblance to the boa; its head which it kept raised, sometimes causing its pointed and arched tongue to tremble, was flattened: its body, of a surprising diameter, formed two series of circles or knots on the surface, diapered with patches of black and pale yellow; one of these series, below its raised withers, was separated from the other series of these coils or rings, of which I was able to count eleven, by a prolongation of its majestic body.

Is this an invention of an eccentric writer anxious for notice or a wildly exaggerated description of a reticulated python? M. Vanier does not help one to decide. He adds, in a similarly turgid style:

> Scientists, serious men, are taking an interest in this gigantic ophidian, and several newspapers have reported on it. We mention among others *La France Littéraire*, *Le Propagateur du Var*, directed by the learned Dr Rossi of Toulon, *Le Contemporain de Bordeaux*, etc. With such support, it is not permissible to doubt the veracity of our author.

With or without M. Vanier's permission I propose to do so.

Having dealt with the obvious mistakes and inventions of the whole of the British period, we can go back to the beginning and look at those which seem to be more genuine.

It is unfortunate that the first of these, in order of date, are neither typical nor British, and may also have to be discarded. We begin with an American report at second hand. According to the *Boston Atlas* of 18 February 1849 Captain Adams of the schooner *Lucy and Nancy* saw a monster near the mouth of the St John's River.

> It lifted its head, which was that of a snake, several times out of the water, seemingly to take a survey to the vessel, and at such times displayed the largest portion of its body, and a pair of frightful fins or claws, several feet in length.

It was a dirty brown and they reckoned that it was 90 feet long and about 7 feet across the widest part of its back.

The description of the creature is plausible enough—it reminds one of Hans Egede's 'most dreadful Monster'—but its movements are less so. It is hard to imagine how it could lift 'the largest portion of its body' out of the water except in a sudden leap or somersault. One cannot help wondering whether it may not derive from an old picture of Egede's monster rather than something actually seen.

The next sea-serpent, on the other hand, is completely original. During the summer of 1849 Joseph Holland, Jacob Kedy and two other fishermen were on South West Island on the west of the entrance to St Margaret's Bay, Nova Scotia, when they saw a very large and long animal swimming near the shore. They launched a boat and, when they got nearer, saw that it looked like a snake 60 feet long and as large in circumference as a puncheon.

> It was proportioned like an eel [says the Rev. John Ambrose who reported the story], *i.e.* tapering towards the extremities, with no caudal fin perceptible, but one very high fin, or row of spines, each of about an inch in diameter at the base, erected along its back, serving indeed for a dorsal fin, like the folding fin of the *Thynnus vulgaris*, or albicore.[1] This spinal erection seemed to occupy about one third of its length, each end of it being about equi-distant from the Serpent's extremities; and at a distance, somewhat resembling, in size and appearance, the sail of a skiff. The animal's back was covered with scales, about six inches long and three inches wide, extending in rows *across* the body, *i.e.*, the longer diameter of the scale being in the direction of the circumference of the body. The colour of the back was black. The men had no opportunity of seeing the belly, but what the Americans would call 'a smart chance' of becoming acquainted with the inside of it; for the creature, perceiving the boat, raised its head about ten feet above water, turned towards it, and opened its jaws, showed the inside of its mouth red in colour and well armed with teeth about three inches long, shaped like those of a cat-fish. The men now thinking it high time to terminate the interview, pulled vigorously for shore, followed for some distance by the snake, which at length gave up the chase and disappeared.

This very detailed description seems at first sight to refer to a fish. But what fish? Despite the row of high spines it is not an oarfish. These fish are far from being black and as thick as a puncheon. Only the true eels (Order Apoda) can raise their heads some distance above water. They sometimes raise almost half of their bodies and then scull with their tails. But eels are usually not scaly and never have stiff spines. If the spines are joined they would be rather reminiscent of a Sailfish (*Istiophorus*), which gets its name from its high dorsal fin. In any case, if a fish were to raise its head 10 feet above the water, it would not be able to bend it down so that one could see the inside of its mouth.

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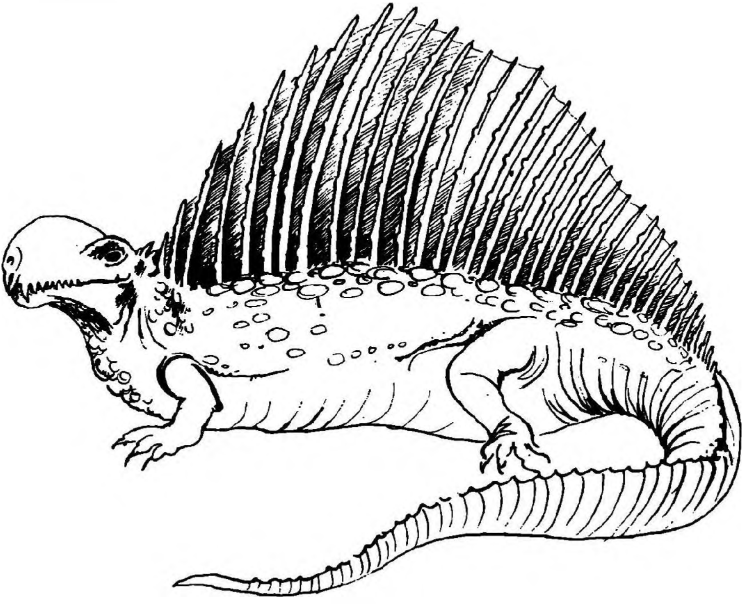
[1] The official scientific name of the true or Red Tunny is now *Thunnus thynnus*. In Nova Scotia specimens may be 13 feet long and weigh 1,500 pounds.

If the description is truthful and accurate, it seems more to apply to a reptile, which can move its head on its neck. But as such an animal—a sort of odd marine *Dimetrodon*—has never been described by anybody else, even in a work of palaeontology, this report is unacceptable and seems very suspect.

At all events this St Margaret's Bay sea-serpent has little in common with the maned one seen there in 1846 by James Wilson, a teacher, and James Boehner, both of Peggy's Cove, nor with the one that other inhabitants of the same place, William Crooks and his son Henry, saw in the bay several years later. It was dark brown, not more than 16 feet long and about 2 feet in diameter—by no means monstrous.

> It was swimming in the landwash [says Ambrose], apparently endeavouring to get ashore, which consummation to its labours appears not to have been wished by Mr. Crooks, who, with his son, incontinently took to their heels, nor did they consider themselves safe until once more surrounded by the houses of Peggy's Cove.



46. *Dimetrodon*

The next report also refers to a more 'normal' sea-serpent, if one can use such a phrase. It occurs in an article in the Catalan language on 'Fantastic Zoology' by a Spanish naturalist, Rossend Serra i Pages. He heard it from a relative, a ship's captain, who had heard it from the eye-witness, a friend and colleague who commanded a Catalan frigate. It is thus a story at third hand, full of gross exaggerations, no doubt added in the telling over the years. Around 1850 the ship met during the last third of a voyage to Havana a sea-monster whose huge neck reached as high as the main topsail. It showed a body like a whale's with two fins. For twenty-four hours it followed the ship—at the end of which the crew were crazed with fear.

We now turn at last to some British reports. They come from the Indian Ocean where hitherto the supposed sea-serpents have always turned out to be something else. The first account is of one seen by the whole crew of H.M.S. *Cleopatra* on 15 September 1849 when on voyage to Singapore. The first report of it in the *Illustrated London News*, says no more than that it was about 30 feet long. But in 1892 George Lucas, who had been serving aboard her, sent some more details to *Answers*:

> The head of the monster was much like a dog's, the body being about eight feet in circumference, as far as we could judge. Its colour was of a greenish brown.

The sea-serpent which the British ship *Barham* met south of the Mozambique Channel is much odder. Dr Oudemans thought that it was a known animal, but was he right?

It was first described by Captain Steele of the 9th Lancers who was returning to his regiment in the summer of 1852 and who wrote a letter which found its way into the columns of the *Zoologist*.

> On the 28th August, in long. 40° E., lat. 37° 16′ S., about half-past two, we had all gone down below to get ready for dinner, when the first mate called us on deck to see a most extraordinary sight. About five hundred yards from the ship there was the head and neck of an enormous snake; we saw about sixteen or twenty feet out of the water, and he *spouted* a long way from his head; down his back he had a crest like a cock's comb, and was going very slowly through the water, but left a wake of about fifty or sixty feet, as if dragging a long body after him. The captain put the ship off her course to run down to him, but as we approached him, he went down. His colour was green, with light spots. *He was seen by every one on board.*

Not everyone, of course, wrote a report of the monster, but one other officer did, and part of his letter was printed in *The Times*:

> You will be surprised to hear that we have actually seen the great sea-serpent, about which there has been so much discussion … His head appeared to be about sixteen feet above the water, and he kept moving it up and down, sometimes showing his enormous neck, which was surmounted with a huge crest in the

> shape of a saw. It was surrounded by hundreds of birds, and we at first thought it was a dead whale. He left a track in the water like the wake of a boat, and from what we could see of the head and part of his body, we were led to think he must be about sixty feet in length, but he might be more. The captain kept the vessel away to get nearer to him, and when we were within a hundred yards he slowly sank into the depths of the sea. While we were at dinner he was seen again, and a midshipman took a sketch of him, of which I will send you a copy.

This sketch has not, as far as I know, ever been published; which is a pity, for it would have been worth pages of description and have prevented much dubious argument. Philip H. Gosse was tight when he said,

> The descriptions, however, show great discrepancy with that of the creature, seen from the *Daedalus*, and cannot be considered as confirmatory of the former account, otherwise than as proving that immense unrecognized creatures of elongate form roam the ocean.

But his attempt to identify the creature was less happy:

> If it were not for the spouting—which is not mentioned by one observer, and may possibly have been an illusion—I should be inclined to think that this may have been one of the scabbard fishes [oarfish], specimens of which inhabit the ocean of immense size.[1] They carry a high serrated dorsal fin, and swim with the head out of the water.

Dr Oudemans shares this view, but with qualifications which really make it untenable.

> *Apparently* the most plausible explanation is that given by Mr. Gosse, viz., that it was a riband or scabbard fish. The dorsal fin which in these kind of fishes begins at the occiput, is red or crimson coloured, and serrated, so that it may have given rise to the expressions of 'a crest like a cock's comb', and 'a huge crest in the shape of a saw'. But riband fishes are deep-sea fishes. When floating on the surface they are dying or already dead. They never 'swim with their head above the surface'! Moreover the green colour does not agree with the common silvery hue of these animals.

Personally I think Dr Oudemans is mistaken in thinking an oarfish's fin could be described as he suggests. Red is too striking a colour not to have been mentioned in the reports. Moreover we shall find other sea-serpents described with a high serrated crest, but having nothing else in common with oarfish. It is better to admit that the *Barham*'s green monster is neither an oarfish nor the traditional type of sea-serpent, but a new and hitherto unreported kind.

[1] This is not so. The biggest oarfish are not more than 23 feet long.

When, on 26 March 1849, a strange animal which the *Illustrated London News* boldly called a 'sea-serpent' was caught off Cullercoats in Northumberland, the mystery did not last long. Two naturalists, Albany Hancock and Dr Dennis Embleton examined the monster, which was 12 feet 3 inches long, and concluded that it was a new species of oarfish. But it was not until 1856 that A. G. More put forward the theory that 'in some at least of the many instances of his reported appearance' the sea-serpent might be an oarfish, known to be of 'huge size' and 'extreme rarity'. 'May we not reasonably suppose that there exist other and more gigantic forms of this most interesting race as yet uncaptured, and such as might easily simulate, in the waving of their long dorsal fin, the so called "mane" of the great sea-snake.'

More may well have been right to suppose that there are still unknown species of oarfish. But, like Oudemans, I do not believe that these fish of the middle depths *normally* swim on the surface with their heads out of the water. Why on earth should they? In fact, when some abnormal reason brings these fish to the surface they enter warmer and warmer water, and their metabolism then requires more and more oxygen, until they suffocate. Asphyxia might then force them to lift their heads out of the water and breathe air in desperation. This may be why oarfish are sometimes seen behaving so oddly.

Moreover these fish are so peculiar that whenever one is seen on the surface (always dying, of course), caught or found on the beach, there can be no doubt what it is, even when it is exhibited to the crowds as a true sea-serpent. The following account which Captain Hawtaigne, R.N. sent to the *Zoologist* in January 1860 makes this very plain:

> *A sea-serpent in the Bermudas.*—I beg to send you the following account of a strange sea-monster captured on these shores, the animal being, in fact, no less than the great sea-serpent which was described as having been seen by Captain M'Quhae, of H.M.S. 'Daedalus', a few years since. Two gentlemen named Trimingham were walking along the shore of Hungary Bay, in Hamilton Island, on Sunday last, about eleven o'clock, when they were attracted by a loud rushing noise in the water, and, on reaching the spot, they found a huge sea-monster, which had thrown itself on the low rocks, and was dying from exhaustion in its efforts to regain the water. They attacked it with large forks which were lying near at hand for gathering in sea-weed, and unfortunately mauled it much, but secured it. The reptile was sixteen feet seven inches in length, tapering from head to tail like a snake, the body being a flattish oval shape, the greatest depth at about a third of its length from the head, being eleven inches. The colour was bright and silvery; the skin destitute of scales but rough and warty; the head in shape not unlike that of a bull-dog, but it is destitute of teeth; the eyes were large, flat, and extremely brilliant, it had small pectoral fins, and minute ventral fins, and large gills. There were a series of fins running along the back, composed of short, slender rays, united by a transparent membrane, at the interval of something less than an inch from each other. The creature had no bone, but a

> cartilage running through the body. Across the body at certain intervals were bands, where the skin was of a more flexible nature, evidently intended for the creature's locomotion, screw like, through the water. But its most remarkable feature was a series of eight long thin spines of a bright red colour springing from the top of the head and following each other at an interval of about an inch; the longest was in the centre: it is now in the possession of Colonel Munro, the acting Governor of the Colony; and I had the opportunity of examining it very closely. It is two feet seven inches long, about three eighth of an inch in circumference at the base, and gradually tapering, but flattened at the extreme end, like the blade of an oar [see Plate 8].

One could hardly wish for a more accurate description of an oarfish. And when the remains of the fish were examined by a naturalist, J. Mathew Jones, this is what it proved to be.

One wonders what on earth made Captain Hawtaigne think that this oarfish with its flaming crest was what Captain M'Quhae and his men had seen. The converse process, of explaining *all* sea-serpents as oarfish, is more natural. We can follow the different fashions in explanations, and each time the theory in vogue is considered by the man-in-the-street to be the only true one. We have seen the sea-serpent reduced to a row of porpoises, a big tunny, a basking shark, a school of whales, a *Saccopharynx*, a drifting boa, a sea-elephant, giant seaweed and an oarfish. There will be others. But the oarfish is perhaps the most lasting. It is tempting to explain the sea-serpent, the Great Unknown, by the Little-Known, the oarfish, for the step between them does not seem long.

It was certainly no oarfish that Captain William Taylor, mate of the *Peggy* of Liverpool, saw towards the end of 1852 about a mile from the ship when she was sailing up the West Coast of Africa with a cargo of oil from Lagos. Nor was it any of the other creatures known to science that I have just listed. It seems much more like Rafinesque's explanation of a giant eel:

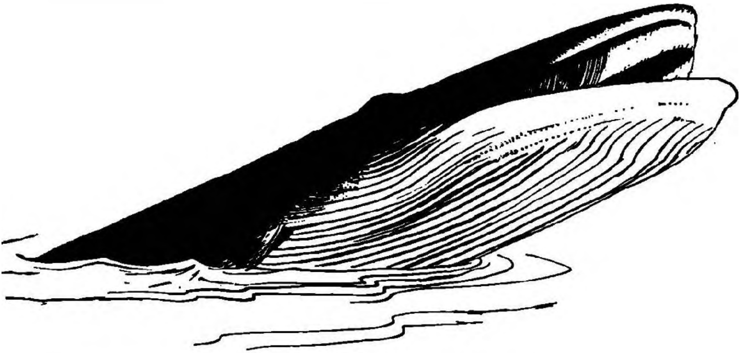
> I thought at first it was floating seaweed, but, on looking through the glass, I saw the object was rapidly moving, and would be soon crossing our bow. Our skipper, who was below, was called up, and he had the barque's course altered to come near the object, which we then plainly saw was a huge fish of the serpent kind, going along with the body partly below and partly on the surface of the water.
>
> Its head was kept some three or four feet above water, and in a general appearance I should say was like a gigantic conger-eel with a serpent's head, and quite 100 feet long—perhaps more than that.

A fairly similar sea-serpent was said by Dr T. S. Traill in 1854 to have been seen by his friend Andrew Strang, 'a gentleman of unblemished honour', off the Scottish coast.

> Once when … deep-sea fishing … he saw pass below his boat, at the depth of eight or ten feet, an enormously long fish, of an eel shape. It was swimming below slowly with a vermicular motion, and appeared to be at least sixty feet in length.

On the other hand the sea-monster met by the brig *Albeona* of Liverpool in 1854 in longitude 13° E. and latitude 38° S., rounding the Cape of Good Hope on the way to China, can be explained as a known animal. Captain Charles S. Richardson's account of it in his official log is exemplary:

> Sept. 4, 5 pm. light winds and smooth water, observed broken water on the larboard quarter, about 5 ship's lengths distance, when presently the head and part of the body of an enormous sea-monster appeared about 30 ft above water, in an angle of about 60. His head was long and narrow—eyes not discernible. From the top of his snout, about 12 ft on each side of his head, was a white streak, about a foot in width, which I suppose to be his mouth which he kept shut. About 6 ft from the termination of the white streak, (or jaw) there was a protuberance on his back, like a small water-cask. His body at the surface of the water was about the same size round as the long boat.
>
> Underneath his jaws was a quantity of slack skin, like unto the pouch of a pelican. It was of lighter colour than the rest of his body, which appeared quite black, and free from any description of hairs or bristles, being quite smooth. He appeared about 180 ft long, as near as could be judged. The water broke in several places along his body, which I think must be caused by similar protuberances to the one behind his head. He was visible about 15 minutes, during which time he went under water three times, stopping about a minute each time. He kept moving his head from side to side, making not a straight but a serpentine course through the water, just keeping way with the vessel. From the position in which he lay in the water, and being so close, I have not the slightest hesitation in saying that it was the celebrated great sea serpent seen by her Majesty's ship *Dawdalus* [*sic*] in 1849 or 1850, between the Cape of Good Hope and St Helena.



47. Right side of a Common Rorqual

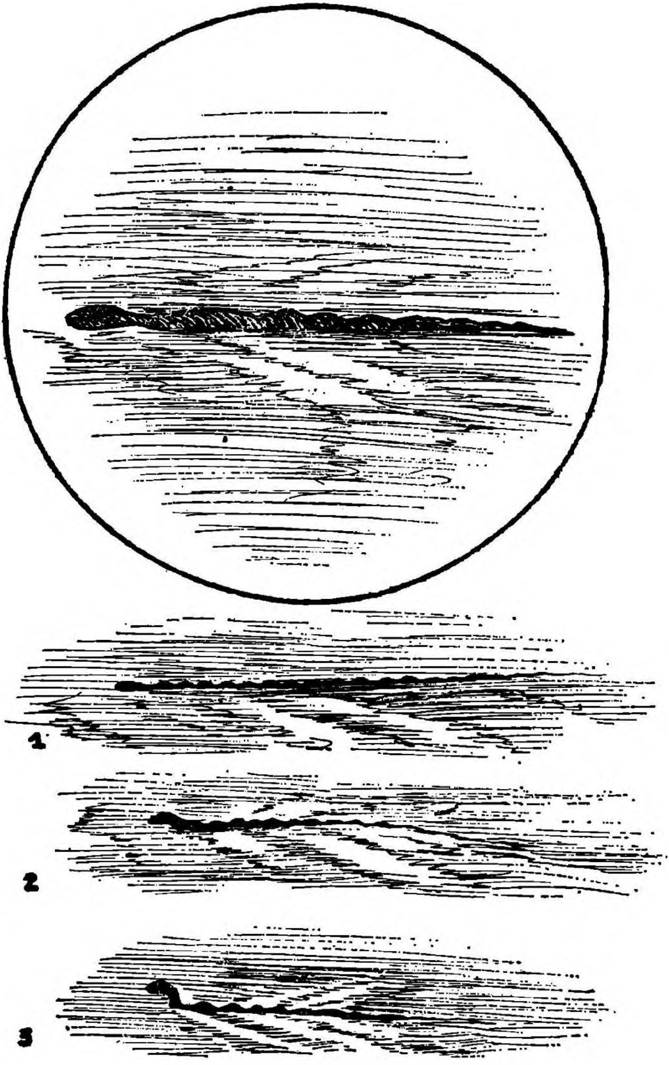
In fact this animal is not very like the *Daedalus* sea-serpent. If we draw a picture from the captain's description we shall have a faithful portrait of a Common Rorqual (*Balaenoptera physalus*) lifting its head and part of its body obliquely out of the water. There is something very odd about this whale: it is coloured asymmetrically. Its left lower lip is grey, but in the adult the right one is white and looks like a light strip 12 or 13 feet long and a foot wide. As the *Albeona*'s monster appeared on the larboard side, it was it right side that was seen. About 6 feet from the mouth the rim of the blow-vent does form a protuberance. And the creases on the throat do make it look rather like a pelican's empty pouch. So far the details agree. Moreover rorquals are relatively slim whales, and when they raise their heads above water they seem much slimmer, because the lower part is very light and only the black upper part stands out against the sea. No doubt this was what led Captain Richardson to take a whale for a sort of serpent and to imagine that altogether it was about 180 feet long.

The sea-serpent with a great horse's mane in the Pontoppidan tradition also turns up in the South Atlantic off St Helena, where a Dutch master mariner met one in 1854—or so his grandson, Captain De Weerdt told Count G. A. Bentinck.

We owe the other 1854 sea-serpent to the Hon. Amelia Matilda Murray, who tells in her book, *Letters from the United States*, how Captain Peat of the steamer *William Seabrook* was going up the Savannah River, when everyone on board saw a gigantic serpent appear for a moment ahead of the boat. The next day Captain Rollins of the *Isabel* saw the creature near Savannah at the mouth of the river, where it raised its head as high as the funnel.

Two years later another sea-serpent appeared in the middle of the North Atlantic near the British ship *Imogen*, whose commander, James Guy, sent this extract from his log to the *Illustrated London News*:

> *Imogen*, from Algoa Bay, towards London. Sunday 30th March, 1856. Lat. 29 deg. 11 min. N.; Long., 34 deg. 36 min. W.; bar. 30.50; calm and clear. Four vessels visible to southward and westward.
>
> About five minutes past eleven, a.m., the helmsman drew our attention to something moving through the water, and causing a strong ripple about 400 yards distant from our starboard quarter.
>
> In a few moments it became more distinct, presenting the appearance represented in Fig. 1 [Fig. 48], and showing an apparent length of about forty feet (above the surface of the sea), the undulations of the water extending on each side to a considerable distance in its wake. Mr. Statham immediately ascended to the main-topsail-yard, Captain Guy and Mr. Harries watching the animal from the deck with the telescope.
>
> After passing the ship about half-a-mile, the serpent 'rounded to' and raised its



48. Three views of the *Imogen* sea-serpent, 1856, and (*circled*) as seen through the telescope

> head, seemingly to look at us (Fig. 2), and then steered away to the northward (N.E.), possibly to the neighbourhood of the Western Islands [the Azores], frequently lifting its head (Fig. 3). We traced its course until nearly on the horizon, from the topsail-yard, and lost sight of it from deck about 11h. 45m. a.m.
>
> No doubt remained in our minds as to its being immense snake, as the undulations of its body were clearly perceptible, although we were unable to distinguish its eyes. The weather being fine and the glassy surface of the sea only occasionally disturbed by slight flaws (catspaws) of wind we had a perfect opportunity of noticing its movements.

It was signed by Guy himself and by three passengers, J. H. Statham, Julian B. Harries and D. J. Williamson. Some excellent sketches completed, and indeed corrected, the description, for they showed that the animal moved in a straight line, undulating up and down and showing a series of humps on its back. It could not therefore be an 'immense snake' as they thought. But this does not affect the value of their evidence, for few people have seen a snake swimming, and they may be excused for not knowing how one would do so.

A few months later the *Illustrated London News* received a new report of a sea-serpent—and what a sea-serpent!—in a letter from Edmund J. Wheeler and Co., a Colonial Agency in London:,

> We hand you the following extract from the log-book of our ship *Princess*, Captain A. R. N. Tremearne, in London Docks 15th inst. from China, viz:—
>
> 'Tuesday, July 8, 1856. Latitude accurate 34° 56′ S.; Longitude accurate 18° 14′ E. At one p.m. saw a very large fish, with a head like a walrus, and twelve fins, similar to those in a black fish, but turned the contrary way.[1] The back was from 20 to 30 feet long; also a great length of tail. It is not improbable that this monster has been taken for the great sea-serpent. Fired and hit it near the head with rifle-ball. At eight, fresh wind and fine.'

There follow some comments by the Colonial Agency, vouching for Captain Tremearne who had been six years in their employment, and who had drawn a rough sketch of the creature.

It must be admitted that the captain needs all the guarantees of his veracity that he can get if we are to believe in the extraordinary beast in his picture. It looks like a caricature of a cross between a centipede and a whale spouting. But, of course, we cannot all hope to draw animals like Dürer.

In his eagerness to make as many reports as possible fit in with his own version of the sea-serpent, which had only four flippers, Dr Oudemans included this 'very large fish' in spite of its twelve fins. He justified this by assuming that Captain Tremearne 'was the dupe of an optical illusion, resulting from the very rapid padding of the animal's fore-flappers'.

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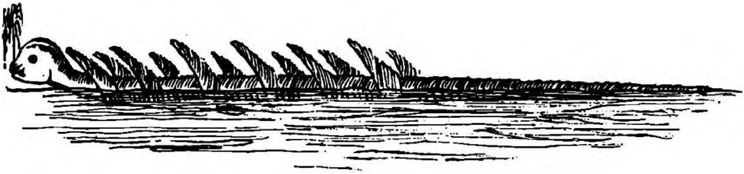
[1] He clearly means the *dorsal* fin of the dolphin known as Blackfish (*Globicephalus*), yet in the sketch he shows six pairs of *lateral* fins pointing upwards in a most improbable manner. I hope to explain in due course what he saw.

Here again it seems to me that Oudemans has made a psychological error. If somehow or other the rapid paddling of one pair of flippers could make them look more than they really were, the witness would have said there were a large number and not given an exact figure. If Captain Tremearne says that there are twelve, and drawn a picture of twelve, it is because he has counted that number.



49. The *Princess* sea-serpent, 1856, after Captain Tremearne

Nor is he the first to have described such a monster. His drawing of an animal half-way between a whale and a centipede is extraordinarily reminiscent of the creature, not so far identified, which Guillaume Rondelet calls the 'cetacean centipede' in his great sixteenth-century work *L'Histoire entière des poissons*:

> There are two species of marine centipede [writes the father of ichthyology], one is small, of the number of those which have several sections in the body, which we shall speak of in its place. The other is a cetacean, which is called centipede because of the multitude of feet, as the land centipedes have many feet. The feet of this centipede are as oars with which it propels itself. I have a portrait of one from those who have assured me they have seen such in the Indies, which portrait is not different from the description of Aelian,[1] who says that the centipede is a very big cetacean fish, which one cannot look at dead on the beach but with great fear. Mariners say that he rises sometimes upon the sea, and that one can see the hairs of his very big nostrils, a tail like the tail of a lobster, the rest of the body may be compared to a galley with three oars on each bench, the feet here and there like oars for swimming.

These 'hairs of his very big nostrils' may be what led Captain Tremearne to speak of a 'head like a walrus', and his 'very large fish' may thus be the same creature as Rondelet's cetacean centipede or Aelian's great sea-centipede.

We shall find more detailed information about this strange beast later, so I shall not discuss its probable nature now. It has already complicated the sea-serpent's story considerably, but, however fantastic the cetacean centipede may seem, we cannot ignore it if we are to see the problem clearly.

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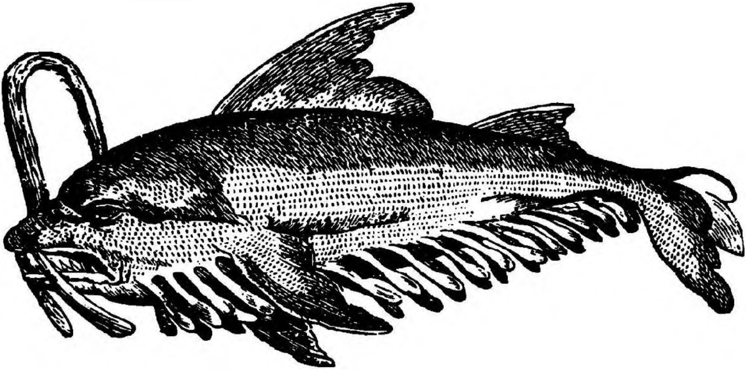
[1] *On the Nature of Animals*, book XIII, chapter xxiii.

The next two reports are also from the South Atlantic. What are we to make of the sea-serpent seen by Dr Biccard, then in charge of Somerset Hospital, his son and Mr Murray, keeper of the old lighthouse at Green Point which overlooks Table Bay, Cape Town, where the sighting took place on 16 February 1857? Perhaps he was too anxious to shoot the beast with his rifle to observe it properly. Yet he gives us a sketch of it in two positions, and a detailed description:

> As I have stated, the distance the animal kept from shore was not more than 200 yards; its length was about 200 feet, but its thickness I cannot tell, the upper part of the body only being visible. The head could be seen but indistinctly, as he raised it at intervals, as shown in the sketch. I consider the protuberance to be the upper part of the head, but I could not discover the eyes, notwithstanding the short distance, and the telescope which was a pretty good one. The colour of the animal was a dark dull colour, except the head, which was maculated with large white spots.

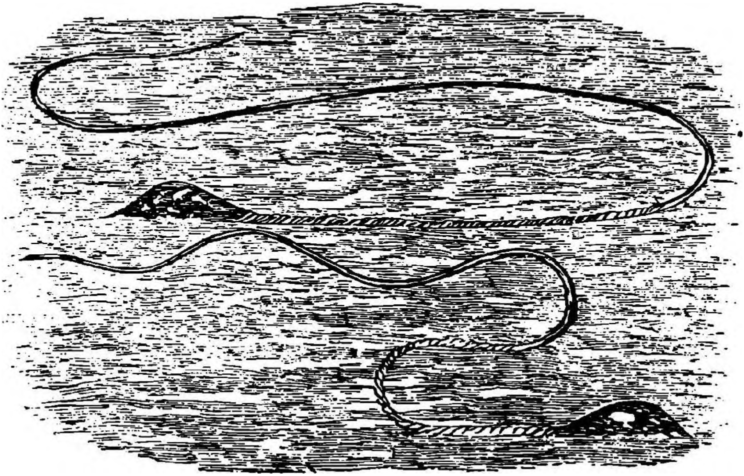


50. The cetacean centipede, after Guillaume Rondelet, 1554

Dr Biccard's picture shows something more like an immensely elongated tadpole or a gigantic spermatozoon than a serpent. One wonders why he called the only substantial part of it a 'head', when it looks more like a 'body', and the long twisted tail, that looks like nothing so much as a floating length of coir rope, the 'body'. This so-called body is so unlike any part of an animal that one cannot help thinking that it may have been a net or rope towed by a shark or porpoise which had got caught in it and whose wounded body appeared to be what the doctor called the head.

We now turn to an extract from the Board of Trade Meteorological Journal which Captain George Henry Harrington, encouraged by the *Daedalus* precedent, sent to the Board of Trade, who passed it on to *The Times*:

> Ship Castilian, Dec. 12, 1857, north-east end of St. Helena, bearing north-west, distance 10 miles.
>
> At 6.30 p.m., strong breezes and cloudy, ship sailing about 12 miles per hour. While myself and officers were standing on the lee side of the poop, looking towards the island, we were startled by the sight of a huge marine animal which reared its head out of the water within 20 yards of the ship, when it suddenly disappeared for about half a minute, and then made its appearance in the same manner again, showing us distinctly its neck and head about 10 or 12 feet out of the water.



51. Two views of the Table Bay sea-serpent, 1857, after Dr Biccard

> Its head was shaped like a long nun buoy, and I suppose the diameter to have been seven or eight feet in the largest part, with a kind of scroll, or tuft of loose skin, encircling it about two feet from the top; the water was discoloured for several hundred feet from its head, so much so that on its first appearance, my impression was that the ship was in broken water, produced, as I supposed, by some volcanic agency since the last time I passed the island, but the second appearance completely dispelled those fears, and assured us that it was a monster of extraordinary length, which appeared to be moving slowly towards the land.
>
> The ship was going too fast to enable us to reach the mast-head in time to form

> a correct estimate of its extreme length, but from what we saw from the deck we conclude that it must have been over 200 feet long. The boatswain and several of the crew who observed it from the topgallant forecastle [? foremast] state that it was more than double the length of the ship, in which case it must have been 500 feet; be that as it may, I am convinced that it belonged to the serpent tribe; it was of a dark colour about the head, and was covered with several white spots.

No doubt the crew's estimate of the length is very exaggerated. More to the point is the remark about 'a kind of scroll, or tuft of loose skin' forming a collar behind the head, especially as it was seen from only about 20 yards away. It seems to be the same thing that other observers have described as a 'mane' or a 'bunch of seaweed'—but this is by no means certain.

Despite the exact details given and the obvious good faith of the witnesses who had nothing to gain by making an official report, the account signed by Captain Harrington and his officers was much ridiculed—and by a fellow captain. For it was on this occasion that Captain Frederic Smith of the *Pekin* told his dubious story of the giant seaweed that I have quoted on page 201. Whereupon Rear-Admiral W. A. B. Hamilton, Secretary to the Admiralty, sprang to Harrington's defence and announced that the captain would answer questions on the subject when he arrived in London. This he duly did, and should have convinced anybody that there was no question of a hoax. But this did not prevent more sarcasms from Smith. As we have already seen, the most truthful of these two captains was not the one the man-in-the-street might think.

Six weeks after Captain Harrington's encounter, a different, and apparently quite new, type of sea-serpent was seen between St Helena and Cape Town by Captain Suckling of the *Carnatic*, and described as like 'a large spar sticking out of the water and one some thirty feet above the level of the sea'. Never had a serpentine sea-serpent stuck up so high.

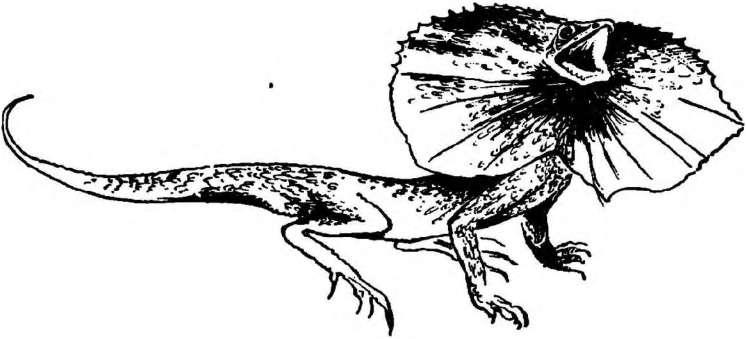
Then we have two reports from the Indian Ocean. Neither helps much to establish the existence of the sea-serpent there. The first is the *British Banner* hoax which I have already dealt with. The second says that something that could only be a sea-serpent 50 to 100 feet long passed between the brigs *Krishna* and *Menx* of the Indian Navy.

The peak of the British Period came in 1860 when Philip Henry Gosse published *The Romance of Natural History*. It is a classic of popular science, well-written and well-documented; and it includes a chapter on 'The Great Unknown'. Some may regret that he has been too parochial in 'Confining myself to *English* witnesses of known character and position, most of them being officers of the crown'. And he quotes only seven—which we have just listed. But Gosse knew well enough what evidence would best convince an English reader.

I do not propose to give here, even in a condensed form, his brilliant plea for the existence of the sea-serpent. All his arguments are incorporated in this book and are quoted where they are most relevant. But I shall say something about his opinion about what the beast is.

After dealing with the explanations of faulty observation of known phenomena, he considers the possibility of a very elongated cetacean and of giant species of eels, and goes on to say,

> It yet remains to consider the hypothesis advanced by Mr. E. Newman, Mr. Morries Stirling, and 'F.G.S.', that the so-called sea-serpent will find its closest affinities with those extraordinary animals, the Enaliosauria, or Marine Lizards, whose fossil skeletons are so abundantly scattered through the Oolite and the Lias.



52. *Chlamydosaurus*

He concludes, after careful reflection, 'I must confess that I am myself far more disposed to acquiesce in this hypothesis, than in any other that has been mooted.' May not the sea-serpent be 'essentially a *Plesiosaurus*, with the colossal magnitude of a *Pliosaur*?' And he adds:

> There seems to be no real structural difficulty in such a supposition except the 'mane', or waving appendage, which has so frequently been described by those who profess to have seen the modern animal. This, however, is a difficulty of ignorance, rather than of contradiction. We do not *know* that the smooth integument of the *Enaliosaurs* was destitute of any such appendage, and I do not think there is any insuperable improbability in the case. The nearest analogy that I can suggest, however, is that of the *Chlamydosaur*, a large terrestrial lizard of Australia, whose lengthened neck is furnished with a very curious plaited frill of thin membrane, extending like wings or fins to a considerable distance from the animal.

This certainly agrees with Captain Harrington's description of 'a kind of scroll, or tuft of loose skin'.

We owe to Charles Gould, the son of John Gould, the famous zoologist and painter of Australian fauna, an account of another sea-serpent with a frill like a chlamydosaur. He wrote a book, *Mythical Monsters*, published in 1886, in which he argued that,

> many of the so-called mythical animals, which throughout long ages and in all nations have been the fertile subject of fiction and fable, come legitimately within the scope of plain matter-of-fact Natural History, and that they may be considered, not as the outcome of exuberant fancy, but as creatures which really once existed, and of which, unfortunately, only imperfect and inaccurate descriptions have filtered down to us, probably much refracted, through the mists of time.

This book, with a purpose so near to my heart, has a whole chapter on the sea-serpent. It is exceptionally well documented and, besides the reports already published in journals or monographs, includes ten which are not so far as I know to be found elsewhere. This is no doubt because they were reported directly to the author when he was in the Far East. Thus, when he was in Singapore in 1880, Captain Anderson, formerly a master in the P. & O. Line and now First Officer on the *Pluto* belonging to the Straits Government, assured him that he had twice seen large sea-serpents.

> Once off Ushant, when he was chief officer of the *Delta* in 1861. No account was entered into the log nor any notice sent to the newspapers, for fear of ridicule. On that occasion the whole ship's company saw it; it was five (?) miles distant, and showed fifteen feet of its body out of the water. It resembled a snake with a large fringe round the neck. It appeared to be travelling, and moved its head to and fro like a snake. It never spouted, and was observed for a quarter of an hour.

We need only remark that Gould was right to query the distance at which the monster was seen, and that if a snake moves its head when travelling, it is from side to side rather than 'to and fro'.

Then a maned sea-serpent was again described off the West African coast, this time by an officer on the mail-packet *Athenian*. Part of his letter to a friend was published in the *Zoologist* and the *Illustrated London News*:

> All doubts may now be set at rest about the great sea-serpent. On the 6th. of May The African Royal Mail Steam Ship *Athenian* on her passage from Teneriffe to Bathurst, fell in with one. At about 7 a.m. John Chapple, quartermaster, at the wheel, saw something floating towards the ship. He called the attention of the Rev. Mr. Smith and another passenger, who were on deck at the time, to it. On nearing the steamer it was discovered to be a large snake about 100 feet long, of a dark brown colour, head and tail out of water, the body slightly under. On its head was something like a mane or sea-weed. The body was about the size of our mainmast. You are at liberty to publish this.

This is one of the few trustworthy reports of the tail being seen. Apart from the *Alpha* monster, which seems to have been a giant ray, there are only six previous cases.[1]

In five of the seven known cases the tail is described, at least implicitly, as a serpent's—that is to say long and tapering—and in these five cases various other features were fairly consistently reported. Three times the body is described as thicker than the neck and tail and clearly distinct from them, so it cannot be a snake or even an eel. Moreover a mane is mentioned three times, and in another report the skin is woolly—which also indicates a mammal. Twice the animal was seen to spout like a whale. In short, in these five cases the creature is either a maned sea-serpent, or a 'super-otter' with a short neck and long tail, like that so well described and pictured by Hans Egede.

Does this mean that the *other* types of sea-serpent do not have this kind of tail? We cannot yet say, since it would be rash to describe a tail that was never seen above water. But in the two remaining cases where the tail was seen above the waves or through clear water they were different from the others and from one another.[2]

The only conclusion we can draw for the moment is that the 'super-otter' and maned types of sea-serpent seem most likely to show their tails above water; this may be because their tails are longer or because they are bent upwards or have an upper lobe, and it may also be because they are more supple in all directions—in other words they are mammals, as their hairiness also indicates.

In Britain the increasing number of sober and detailed reports from trustworthy people led more naturalists to apply themselves to the problem. It was no longer possible to laugh it off. The natural history magazines took it up. Besides Newman's *Zoologist* there was *Land and Water* edited by Frank Buckland, Inspector of Fisheries to the Home Office and son of the great geologist William Buckland, and *Nature* which still flourishes today. In the issue of *Land and Water* for 5 January 1878 Dr Andrew Wilson wrote a short article about the sea-serpent which includes the story—apparently authentic—of a big serpentine monster being captured in 1863. The report is taken from the log of the schooner *Beaver* owned by Adam Scott, commanded by Captain Boyle, and the event took place on 2 August 1863 on the west coast of China, near Hamai, at Sungyce.[1]

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[1] Three Scandinavian reports from the mid-eighteenth century (Hans Egede, Sundsland fisherman, Tuchsen of Heröy), Captain Shibbles of the *Mangehan*, in 1835, millwright Barry off Nova Scotia in 1844 and Captain Hope from the *Fly* through the clear waters of the Gulf of California.

[2] Barry told Dawson that his sea-serpent with a row of small humps had a tail that was 'pointed, appearing like half of a mackerel's tail', but the other half might have been under water. Hope said his was like an alligator, so presumably its tail may have been flattened like an alligator's.

> Well, here I am among the Sungyce Hakkas again [wrote Captain Boyle]. I came to anchor about twelve o'clock last night, about two miles out of this harbour. At half-past four o'clock this morning I went on shore with five young Chinese. The villages that are about three miles up the river were all in an uproar. I could not make out what was the matter with them—in fact, I thought it was another fight. A little while longer, I saw them dragging at something, but what it was I could not tell ... When I got a little closer ... I saw that it was a great fish of some kind. He was not dead then ... There were about 3,000 men and boys on the spot, every one with a lance, spear, knife, or chopper. More than half of these men were cutting and haggling at this monster. By the time I had been looking on, and walking round it, they managed to cut about forty feet off its tail or the small end of the monster, which is just the same as a snake's. I requested them to cut off its head, and said I would give them 500 cash to have a good look at the inside of its mouth. This was gladly accepted, while some were standing close to me as if they were out of wind at the hard work they had had with their choppers. I asked them how that fish came there. They told me that he came there at his own accord, and when on the sand made a fearful splashing and noise on the sand and water. At first every one of them were scared, until some of the fishermen ventured close to it, and called out that it was a large fish, and that it was theirs. This caused every one to run with whatever they could get to cut for himself. The fish ran on the bank at three o'clock ...
>
> By this time the monster's head was cut off, but very much disfigured. I had then to draw it up the bank out of the water, and had the lower jaw cut off so as I could examine the inside of the mouth. I found the inside of the mouth to be just the same as a snake's, but it had three rows of soft teeth all as even as anything could be, and exactly the same size. They were movable, that is, I could move them towards the lip and back. At the entrance of the throat I found a strange sort of gridiron-shaped, tough substance, up and down. It was covered with a sort of reddish flesh, which causes me to think this monster of the deep lives on suckson (*sic*—meaning, of course, suction).[2] The snout was flat, the cheek or eye-brow stuck out about two and a-half feet—at least, two and a-half times the length of my boot. The skin was one and a-half inches thick only, but awful tough, of a dirty blue colour. I should think there must have been many tons of barnacles on this monster. Where the barnacles were taken off there was a dirty white spot to be seen. As near as possible, it was twenty seven yards long. The head is exactly like a snake's, but the eye was very like a hog's, till it was perfectly dead. My boots not being waterproof, and the sun being very hot, I was forced to leave, or I should have remained there until it was all cut up and weighed; but

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[1] China has no west coast. Probably the south-west coast is meant. Hamai is probably what is now Amoy. Perhaps Sungyce was on a west-facing shore of the estuary there.

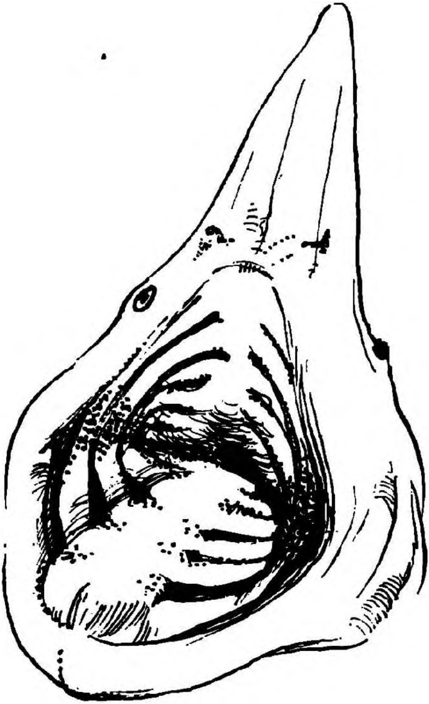
[2] This parenthesis is Wilson's. Personally I think that if this is what Boyle had meant he would have said 'by' and not 'on', and that in any case this does not follow from the 'gridiron'. Boyle clearly meant 'plankton'—an easy enough word to forget or misread.

> this I could not do. I have no idea of his weight. I left, and went ashore at a village close to the waterside, about two miles from the spot where the monster was being cut up. Here I found some tons of it upon the rocks being cut up into great junks [*sic*]. They were spoiling the bones by sawing them up as they were cutting the beef, as they call it.

On 15 August Captain Boyle noted: 'I went ashore, taking my boy with me, but did not see any signs of the sea-monster whatever.'

Wilson's comments on this strange tale are very sensible:

> It is not specially particularized, and such a fact, as well as the details of the narrative itself, together speak well for the innate truth and veracity of the statement. With reference to the nature of the animal indicated, one can hardly say much, seeing that the characters given are not of much value from a zoologist's



53. Inside of a basking shark's mouth showing the gill-rakers

> stand-point—with one exception—that of the teeth. It is remarkable that Captain Boyle should have noticed that the teeth were numerous, uniform in size, and above all, *movable*. These facts clearly point to the fish-nature of the animal; whilst probably the 'gridiron-shaped tough substance' in the mouth was the branchial apparatus and tongue, or rather the representative of that structure, developed to a large extent.

This brings us back to the theory of a big serpentine fish, a huge unknown selachian, as was suggested for the Stronsa beast. Certain features suggest it: the huge size, little bigger than the giants in the group; the flat snout; the triple rows of teeth; the sort of grill at the entrance to the mouth; the diet of plankton, as in the basking shark and the whale-shark, the two largest known sharks; the prominent eye like a pig's (sharks do not have such round and expressionless eyes as other fishes).

On the other hand a shark's tail is not single like a snake's but with two fins. In some species, however, the upper fin is so big and the lower one so small that in a washed-up specimen in the process of being cut to pieces it might look like a reptile's tapering tail.

All the same, despite the characteristic triple row of teeth, we should not reject the giant eel theory which fits the animal's general shape better. Just as whales and sharks seem condemned to feed on plankton once they exceed a certain size, it is possible that congers or morays more than 80 feet long might have to take to a similar diet to survive.

After 1863 no more was heard of the sea-serpent in any of its protean guises for eight years—except as a result of a mistake or a blatant hoax. It seems hardly credible. Since 1815 it was usually reported once, and usually twice, a year, and suddenly there is silence. This silence may, however, just be due to lack of information. For I eventually found in the *Proceedings of the Literary and Philosophical Society of Liverpool* of 1877 that a sea-serpent had been seen in 1870 by John Adams of Norfolk Island, north of the Tasman Sea. He was a grandson of the quartermaster of H.M.S. *Bounty* who had settled on Pitcairn Island and bred there after the famous mutiny.

> On the 15th October, 1870, wind S.E. and light, our boat being a mile off Nepean Island, and on the port tack, our look-out reported a calf (as the young whale is called) about a mile and a half distant on the lee bow. We accordingly kept off, and when about one hundred yards from the supposed calf, he said—'I cannot make out what it is; I have not seen a spout yet; but there is an animal of some sort, for his back is out of the water, and there is a wash there all the time.' 'Very well,' was the answer; 'Keep a sharp look out.' On we went till within a few yards of the object, when the look-out exclaimed—'Look! it is a Sea Serpent!' And look we did. The boat shot within a yard of it, and there it was, a veritable Sea Serpent ... When first seen, I suppose it must have been asleep, for its head was

> lying flat on the surface of the sea, and its body coiled up. The tail of the monster I saw plainly, hanging some three or four fathoms below the surface. When we came near it, the beast, if I may call it so, raised its head out of the water, looked at us, then slowly straightening himself, he very leisurely moved off. I cannot tell you with any certainty the length of it, for it was not lying with its whole length on the surface, but, as nearly as I could judge, it must have been thirty or forty feet. It is of a reddish colour, and about a foot or eighteen inches in diameter. We have been about the Island in boats almost every day when the weather's fine for nearly eighteen years, and have never seen anything like it before or since then.

A confirmation of Adams's sincerity comes from Captain Marcus Lowther, R.N., who wrote to Captain Drevar, who had just seen a sea-serpent, to offer him his sympathy (very necessary under the circumstances) and to tell the story which his friend John Adams had told him, adding: 'I know him to be a man incapable of telling an untruth.'

Adams's story, sincere though it sounds, is certainly odd. The animal was able to coil up on itself and showed no feet, so it must be a true serpent. Are there then really sea-snakes 30 feet long? It might be tempting to discard the report of the descendant of a mutineer and superstitious savages—merely because it does not fit in with our ideas—but this would be most dishonest.

All the same we already have more than enough different unknown animals that have appeared in the sea during the first half of the British Period: prehistoric saurians with a collar or serrated crest, giant congers, monsters with goitre, cetacean centipedes, rays spotted like leopards, 'sea horses', 'super-otters' and red snakes. Even Hieronymus Bosch could not have invented them all.

9

Showing the Flag

(British Period, Part Two, 1871-1891)

See the conquering hero comes
Sound the trumpets, beat the drums!
DR THOMAS MOREL's Libretto to HANDEL's *Joshua*

Every hero becomes a bore at last.
RALPH WALDO EMERSON

EIGHT years of silence, in which the sea-serpent was 'resuscitated', as the press ironically liked to put it, only as a result of hoaxes or mistaken observations, were not easily broken.

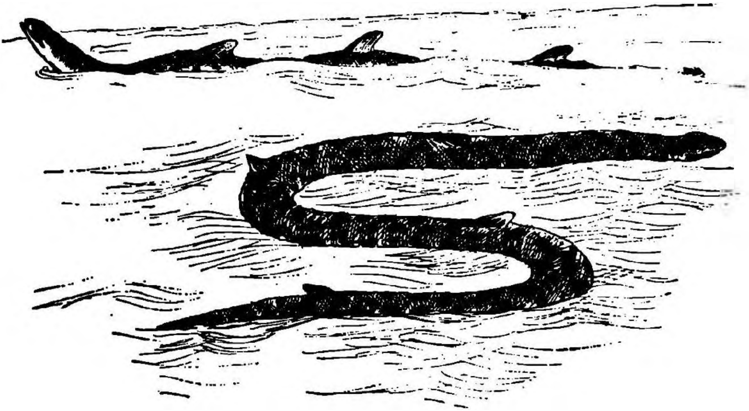
When at last a real one did appear, in 1871 off Kilkee, County Clare, and was seen by several people including a 'well-known clergyman in the north of Ireland', the American press treated it with the same sarcasm that Europeans had bestowed on 'Yankee credulity'. According to the *Limerick Chronicle* it had an enormous head, shaped somewhat like that of a horse and 'a huge mane of seaweed-looking hair, which rose and fell with the motion of the water'. It had glassy eyes and much alarmed the witnesses, so that one lady 'nearly fainted at the sight', not perhaps unnaturally. This aroused much ungallant facetiousness on the part of *Harper's Weekly*, which maintained there was 'far more reason to expect that the serpent himself will be overcome by faintness at some of the sights to be witnessed at many of the watering-places on the English and Irish coasts'.

During these years the sea-serpent's enemies had consolidated their positions. In 1872 Hermann Schlegel, Director of the Leiden Museum, declared that as long ago as 1837 he had 'proved' that the sea-serpent was impossible. In fact all he had done was to say that it was an illusion based on a row of porpoises. And we know from Arthur Mangin's unfortunate proof that the giant squid was mechanically impossible how little such proofs can be worth.

The first report to break the silence was not very conclusive. In August 1872 a Liverpool shipowner, J. F. Walthew sent the *Graphic* a report he had received from Captain A. Hassel of the Norwegian barque *St Olaf*, which had just reached Texas from Newport.

> Two days before arrival at Galveston, at about 4.30 P.M. on May 12, weather calm, smooth sea, lat. 26° 52′, long. 91° 20′, I saw a shoal of sharks passing the ship. Five or six came under the vessel's stern, but before we could get out a line they went off with the rest. About two minutes after, one of the men sang out that he saw something on the weather bow, like a cask on its end. Presently another one called out that he saw something rising out of the water like a tall man. On a nearer approach we saw it was an immense serpent, with its head out of the water, about 200 ft. from the vessel. He lay still on the surface of the water, lifting his head up, and moving the body in a serpentine manner. Could not see all of it; but what we could see, from the after part of the head, was about 70 ft. long and of the same thickness all the way, excepting about the head and neck, which were smaller, and the former flat, like the head of a serpent. It had four fins on its back, and the body of a yellow greenish colour, with brown spots all over the upper part and underneath white. The whole crew were looking at it for fully ten minutes before it moved away. It was about six feet in diameter. One of the mates has drawn a slight sketch of the serpent, which will give some notion of its appearance.

Dr Oudemans thought this report was a hoax, or perhaps based on an optical illusion. He maintains what Captain Hassel and his men saw—if they



54. Two views of the *St Olaf* sea-serpent. 1872, after one of her mates

saw anything—was three sharks swimming one behind the other, the leading one occasionally lifting its head out of the water—not a usual habit of sharks. Moreover, if sharks were to look like a sea-serpent, the last people to be taken in would be those who had just seen a shoal of them. The hoax theory is more probable than this. Oudemans may well be right to challenge Hassel's account, but he does so for the wrong motive, which is that this beast with four dorsal fins doesn't agree with his own idea of what the sea-serpent is like and must therefore be imaginary or illusory. In fact the *St Olaf* monster is not unlike the sea-serpent with many ailerons seen twice in South African waters and to be met again later. Perhaps it was an animal of this kind showing its many-finned side. Sea-animals, especially mammals, often roll on their sides to turn, and sometimes even swim 'corkscrew fashion': this is very characteristic of the otters and pinnipeds. On the other hand Oudemans is right to point out that the lower picture does look more as if it were drawn to show how the serpent *would* look if floating on the surface, than to represent something actually seen. For one thing it is impossibly high in the water.

A few days after Hassel's report was published the sea-serpent regained its reputation. It appeared off the west coast of Scotland, and, though its five-day visit did not compare with the summer of 1819 in Massachusetts, it was seen by very respectable witnesses. This is the historic moment when the British Period came home to the British Isles, for hitherto, apart from the Rev. Donald Maclean's report during the Stronsa affair, there has been nothing but the vague legends recorded by Sir Walter Scott, Dr Hibbert and Andrew Strang. Now, within sixteen years we have sixteen reports, most of them very circumstantial.

The first two witnesses are the Rev. John Macrae, Minister of Glenelg, Inverness-shire and the Rev. David Twopeny, Vicar of Stockbury, Kent. They write:

> On the 20th of August, 1872, we started from Glenelg in a small cutter, the 'Leda', for an excursion to Lochourn. Our party consisted besides ourselves, of two ladies, F. and K., a gentleman, G.B., and a Highland lad.[1] Our course lay down the Sound of Sleat, which on that side divides the Isle of Skye from the mainland, the average breadth of the channel in that part being two miles. It was calm and sunshiny, not a breath of air, and the sea perfectly smooth.
>
> As we were getting the cutter along with oars we perceived a dark mass about two hundred yards astern of us, to the north. While we were looking at it with our glasses (we had three on board) another similar black lump rose to the left of the first, leaving an interval between; then another and another followed, all in

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[1] It was afterwards revealed, when most of the witnesses submitted their own evidence, that these were the minister's daughters, Misses Forbes and Katie Macrae, and his grandson Gilbert Bogle. The Highland lad's name has not been recorded.

regular order. We did not doubt its being one living creature: it moved slowly across our wake, and disappeared. Presently the first mass, which was evidently the head, reappeared, and was followed by the rising of the other black lumps, as before. Sometimes three appeared, sometimes four, five, or six, and then sank again. When they rose, the head appeared first, if it had been down, and the lumps rose after it in regular order, beginning always with that next the head, and rising gently; but when they sank they sank all together rather abruptly, sometimes leaving the head visible.

It gave the impression of a creature crooking up its back to sun itself. There was no appearance of undulation; when the lumps sank, other lumps did not rise in the intervals between them. The greatest number we counted was seven, making eight with the head ... The parts were separated from each other by intervals of about their own length, the head being rather smaller and flatter than the rest, and the nose being very slightly visible above the water; but we did not see the head raised above the surface either this or the next day, nor could we see the eye. We had no means of measuring the length with any accuracy; but taking the distance from the centre of one lump to the centre of the next to be six feet, and it could scarcely be less, the whole length of the portion visible, including the intervals submerged, would be forty-five feet.

Presently, as we were watching the creature, it began to approach us rapidly, causing a great agitation in the sea. Nearly the whole of the body, if not all of it, had now disappeared, and the head advanced at a great rate in the midst of a shower of fine spray, which was evidently raised in some way by the quick movement of the animal,—it did not appear how,—and not by spouting. F. was alarmed and retreated to the cabin, crying out that the creature was coming down upon us.[1] When within about a hundred yards of us it sank and moved away in the direction of Skye, just under the surface of the water, for we could trace its course by the waves it raised on the still sea to the distance of a mile or more. After this it continued at intervals to show itself, careering about at a distance, as long as we were in that part of the Sound, the head and a small part only of the body being visible on the surface; but we did not again on that day see it so near nor so well as at first. At one time F. and K. and G.B. saw a fin sticking up at a little distance back from the head, but neither of us were then observing.[2]

On our return the next day we were again becalmed on the north side of the opening of Lochourn, where it is about three miles wide, the day warm and

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[1] Twopeny says that Miss Forbes Macrae was 'frightened out of her wits' and 'insisted afterwards on being landed at half-past two in the morning, and walked home by herself in the moonlight, thirteen miles over wild mountain tracks'.

[2] 'In a few minutes afterwards,' wrote Miss Katie Macrae, 'the row of lumps appeared again about a mile behind, and this time a triangular fin stuck up from about the 4th lump, and apparently 10 ft., the size of our jib.' Gilbert Bogle says 'I distinctly saw the colour of the creature, and what appeared to be a small fin on the back or neck, moving rapidly sideways, and two or three yards behind the head. Its colour was a dark slaty brown, somewhat similar to that of a porpoise.'

They are certainly not both referring to the same kind of fin. Miss Katie seems to have seen a long pectoral fin as the animal turned over, while her nephew is talking rather of a small dorsal aileron or a soft crest on the neck.

> sunshiny as before. As we were dragging slowly along in the afternoon the creature again appeared over towards the south side, at a greater distance than we saw it the first day. It now showed itself in three or four rather long lines ... and looked considerably longer than it did the day before as nearly as we could compute, it looked at least sixty feet in length. Soon it began careering about, showing but a small part of itself, as on the day before, and appeared to be going up Lochourn.
>
> Later in the afternoon, when we were still becalmed in the mouth of Lochourn, and by using the oars had nearly reached the island of Sandaig, it came rushing past us about a hundred and fifty yards to the south, on its return from Lochourn. It went with great rapidity, its black head only being visible through the clear sea, followed by a long trail of agitated water.

During the rest of the day as they returned northwards through the Sound of Sleat the animal appeared occasionally, showing only its head and a small part of its body above the surface.

To their own account the two clergymen added some 'instances of its being seen by other people, of the correctness of which we have no doubt':

> The ferrymen on each side at Kylerhea saw it pass rapidly through on the evening of the 21st, and heard the rush of the water: they were surprised, and thought it might be a shoal of porpoises, but could not comprehend their going so quickly. Finlay Macrae, of Bundaloch, in the parish of Kintail, was within the mouth of Lochourn on the 21st, with other men in his boat, and saw the creature at about the distance of one hundred and fifty yards.
>
> Two days after we saw it, Alexander Macmillan, boat-builder at Dornie, was fishing in a boat in the entrance of Lochduich,[1] half-way between Druidag and Castledonan, when he saw the animal, near enough to hear the noise and see the ripple it made in rushing along in the sea. He says that what seemed its head was followed by four or more lumps, or 'half-rounds' as he calls them, and that they sometimes rose and sometimes sank all together. He estimated its length at not less than between sixty and eighty feet. He saw it also on two subsequent days in Lochduich. On all these occasions his brother Farquhar was with him in the boat, and they were both much alarmed and pulled to the shore in great haste.
>
> A lady at Duisdale, in Skye, a place overlooking the part of the Sound which is opposite the opening of Lochourn, said that she was looking out with a glass when she saw a strange object on the sea which appeared like eight seals in a row. This was just about the time that we saw it.
>
> We were also informed that about the same time it was seen from the island of Eigg, between Eigg and the mainland, about twenty miles to the south-west of the opening of Lochourn.

To complete the list of witnesses we must add that Lord Macdonald and his guests on his steam-yacht—which included the Rev. Mr McNeill, minister of Skye—saw the monster in Loch Hourn on 22 and 23 August.

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[1] Two and a half miles further east, beyond the Strait of Kylerhea.

Besides the joint report that I have just quoted, Macrae sent a personal account to the *Inverness Courier* in August and Twopeny (over the odd pseudonym, 'T.T.') to *Land and Water* in September. Macrae (whom Twopeny called a 'great naturalist') wrote:

> Neither its appearance nor mode of progression had any resemblance to those of any known cetacean, shark, or fish of any kind. In case any of your readers should imagine that I, as well as the subject of my report am a mere myth, you will please to give my name to this communication, and I believe that among a pretty wide circle of persons who know me there is none who consider me capable of stating as true what I do not believe to be so; or so little acquainted with the sea, as not to know a whale, a porpoise, a shark, or a herring barrel, when I see them.

The other witnesses put their accounts on record, the Misses Macrae in letters written many years later to Dr Oudemans, and Gilbert Bogle in a letter in the *Newcastle Weekly Chronicle* of 31 December 1877. These reports confirm one another down to the smallest details. I have quoted a few relevant passages in footnotes.

After such reports, that good disciple of Owen, Frank Buckland, could no longer attempt to explain this monster away, as his master had done, as either seals, porpoises, turtles or barnacle-covered logs. He did not think that it could be a giant conger, as he had suggested before. But 'after great consideration' came to the conclusion that it was an oarfish. He made, however, one reservation:

> A Gymnetrus, or conger, when swimming would move its body in curves horizontally with the surface of the water, whereas in the drawing now before us and the other two drawings above mentioned, the curves are represented with perpendicular motion. Now, flat-fish have this action, and it may be, therefore, possible that the living phenomenon was a *ground* fish.

Yet those who had seen it categorically stated, 'There was no appearance of undulation'. Once again we see, as on the other side of the Atlantic, that the supposed vertical undulations may be due to the sea-serpent's anatomy rather than its motion. But Buckland, who was determined to explain all sea-monsters as known animals, would have none of this. He preferred to think that it was an oarfish, intoxicated or perhaps paralysed down one side, and therefore swimming on its side, or an enormous flatfish, rather than that a creature with a sinuous body or a back covered with humps should enter his Inspectorate of Fisheries. But in point of fact neither an oarfish nor a flatfish is in the least like the animal seen in Loch Hourn.

Edward Newman was wiser. In 1860 after the sea-serpent caught in Bermuda (see page 235) had turned out to be an oarfish, apparently of a new species, his faith in the plesiosaur's survival was rather shaken and he had even accepted (I cannot understand how) that the *Daedalus* monster might have been an oarfish. These new reports led him to take a more sensible line:

> I have long since expressed my firm conviction that there exists a large animal unknown to us naturalists; I maintain this belief as firmly as ever.

A year later another sea-serpent was seen four times off Sutherland. This was the first time that one had been seen on the east coast of Britain. In the middle of September 1873 Lady Florence Leveson Gower and the Hon. Mrs Coke were driving in their carriage near the sea about eight miles east of Dunrobin when one of them saw what she thought was a large and long marine animal.

'Surely,' she said, 'that is the sea-serpent?'

'Yes, no doubt,' replied the other, 'or else a sea wave?'

Dr Soutar, who saw it next day at seven in the morning when he was dressing, was more positive. It was swimming in the sea near the shore and was between 40 and 50 feet long, and it raised its neck 4 feet out of the water. At breakfast he told his family, 'If I believed in sea-serpents, I should say I have seen one this morning.'

Then a minister, the Rev. James M. Joass, saw it. He was known as an archaeologist and for his scientific turn of mind, and he wrote a letter on the subject to his friend Dr Maynard, who also knew Dr Soutar, in which he told of the first two sightings and went on:

> Next day at noon, on a calm sea, I saw through a glass, about half a mile out, a floating object, which was certainly part of some sort of beast, dead or basking. It drifted along with the tide, and suddenly disappeared near the curing shed. At no time did it raise itself higher than when first seen. Colour brown and light yellow; apparent size seen, about 8 ft. or 10 ft. It was watched for half an hour, and two sketches made there.

Joass had prefaced his reports by saying that the name 'sea-serpent' was unfortunate, since 'the creature when found will turn out to be a saurian allied to Plesiosaurus'. And he reverts to this point again later:

> The cestracion of the Australian seas feeds with teeth of oolitic type, on terebratulæ and trigoniæ, also oolitic molluscs. Why may not a saurian of same age, or some nearly allied form, still exist in the unexplored ocean?

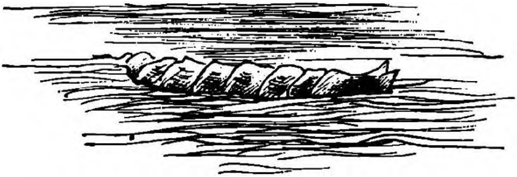
This letter came into the hands of Francis Francis, editor of the *Field* who passed it on to *The Times* with a comment that showed that he had not understood Joass's reference to the Cestracion or Port Jackson Shark, a living fossil deriving from the Jurassic.

> It would be strange, indeed, if the beast after all were to turn out some monstrous saurian; though if his food were confined to animals of those types mentioned by

> Mr Joass, a saurian of the type alluded would be some time collecting materials enough for a meal.

Needless to say this aroused the usual sarcasms from Buckland, who told the readers of *The Times* how the sea-serpent was really a school of porpoises, a turtle, a conger, an oarfish, a halibut, a flock of sea-birds, a basking shark, a tree-trunk or a baulk of wood.

> I cannot agree [he adds] with Mr Joass's theory that his sea snake is a survivor of the ancient Plesiosauri. Mr Francis says the drawing shows a pair of ears at the back of the head similar to horses' ears. According to Mr. Hawkins's restorations at the Crystal Palace, the Plesiosaurus had no ears.



55. One of the Rev. James Joass's very rough sketches of his sea-serpent, 1873

There are many gross and even absurd mistakes in the reinforced concrete monsters at the Crystal Palace, but it is most probable that plesiosaurs, like all the other reptiles, had no external ears—nor for that matter do any of the things which Buckland said had been mistaken for sea-serpents. But Joass had not spoken of ears, his letter had not been intended for publication. nor had he intended to suggest that a plesiosaur had a Cestracion's teeth, Francis and Buckland had been misled by the sketch:

> Both gentlemen speak of our monster having 'ears like those of a horse' misled, probably, by the sketch in my letter, the hurried work of an almost unskilled hand.[1] To me these appendages seemed to be diaphanous and nearly semi-circular flaps or valves over-arching the nostrils, which were in front. The cavity of the eye appeared to be considerably further back, and a peculiar glimmer in it, along with the sudden disappearance of the creature, presented, indeed, the only signs of its vitality, as far as I could see, while I watched it for half an hour, apparently drifting with the rising tide, but always keeping about the same distance off shore.

This reference to 'valves over-arching the nostrils' is interesting. We shall find one type of sea-serpent often described as having ears or horns, which will be explained most ingeniously as schnorkels, like those on submarines, erectile respiratory tubes enabling it to breathe unseen.

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[1] This sketch, as published by *The Times*, is reproduced above as Fig. 55, but it bears so little relation to the interpretations which Francis, Buckland or Joass himself put upon it, that it is hard not to wonder whether some mistake has been made.

A month later, on 18 November 1873, which is very late in the year for sea-serpents, a very different type of monster appeared about 150 miles further south in the Firth of Forth where it was watched by a crowd of some 120 people, one of whom described the occasion in the *Scotsman*:

> Near the middle of Belhaven Bay, and about a quarter of a mile from the place where we were standing, there certainly appeared 'a long and large black animal' in the water, having all the appearance of the Saurian described by Dr Joass. When first observed it was proceding shorewards, with what seemed to be its head and various undulated portions of the body above the surface. After getting near the shore it turned to the westwards, and kept moving about in that position for a considerable time. Sometimes it appeared to stretch itself out to its full length, at which times both its head and tail were seen above water, only a small portion of the middle of the creature being submerged. Most frequently, however, it was the undulations or apparent coils of the body that were observed, two or three of them being occasionally visible at the same time. These coils had all the appearance to the observers at the distance mentioned above of the coils or folds of a serpent, the sea and the black masses being distinctly separated. Occasionally the creature seemed to take a header, and disappeared altogether, but it seldom remained longer than two or three minutes beneath the surface without exposing some part or other of its body. When fully stretched out, as it appeared several times during the period of observation, it seemed to be upward to a hundred feet in length, with an apparent breadth of from two to three feet. No doubt the dimensions must have been very much larger. As it was in sight for upwards of a quarter of an hour, ample opportunity was afforded for watching its movements.

The next appearance was on 20 March 1873 in the West Indies, but it was not made public until 1906 when the *Illustrated London News* published a report by two professional zoologists who had seen a sea-serpent, and a letter in favour of the beast's existence by the naturalist W. P. Pycraft. This encouraged a retired Naval commander, Reginald Yonge, to send the magazine an extract from his old log-book, written aboard H.M.S. *Orontes*:

> March 20, 1873, 3.15 a.m.—Air pump rod carried away. Stopped engines 7.20 a.m. As Captain Perry and myself were walking on the upper bridge we saw something, which first attracted my attention through being white, rise gradually out of the water, and remain stationary for a few seconds. It was the head of an immense monster, and in shape looked for me very much like an eel's head. It rose about 5 ft. out of water, but what was its length under water I could not see. The ship was drifting toward it. I ran down into the chart house for a rifle and while getting it (as the Captain afterwards told me) the head had gradually sunk and risen again close to the ship—almost so close as to touch it, and the Captain had a still better view of it. It appeared not to appreciate the vicinity of the ship as it turned leisurely, sinking at the same time, and swam away in a south-westerly direction, rising to the surface once or twice when the Captain had a shot at it with the rifle

> I had brought him, after which we saw the fish no more. It was seen also by Flemming, quartermaster, and Ransom, signalman, from the lower bridge, and by Lieutenant Lang, from his cabin port, aft, who said that his attention was drawn to it when it first rose by hearing it make a snorting noise. It is considered by those who saw it to be about forty feet in length. The back of the head was black, the throat and belly white, and the eye white and set well back. A few others saw it, but the troops and ship's company being at breakfast, there were not many people on deck.

In a letter which he sent to the *Illustrated London News* at the same time Commander Yonge adds some interesting details:

> At the time we had just come through the Mona Passage, between San Domingo and Puerto Rico, in the West Indies. The weather was beautifully fine. Latitude, about 20 deg. N.; longitude, 70 deg. W.
>
> The Captain is now Admiral John Laisne Perry, whose name, I am glad to see, is still in the Navy List (retired). The First Lieutenant, Lang, is William Metcalfe Lang, now a retired Admiral.
>
> I remember well when the late Admiral Sir Rodney Abundy, Commander-in-Chief at Portsmouth, inspected the ships on April 16 following. He took me and questioned me as to this marine monster of which I had made a rough sketch at the time. And I have no doubt that there is some record of it now at the Admiralty if the *Orontes*' old log still exists.
>
> I believe that I must have considerably under-estimated the height to which the monster's head rose above water—for I do not think that I should have so distinctly seen it if it had been only five feet. However I have left it as I originally wrote it down in my journal.

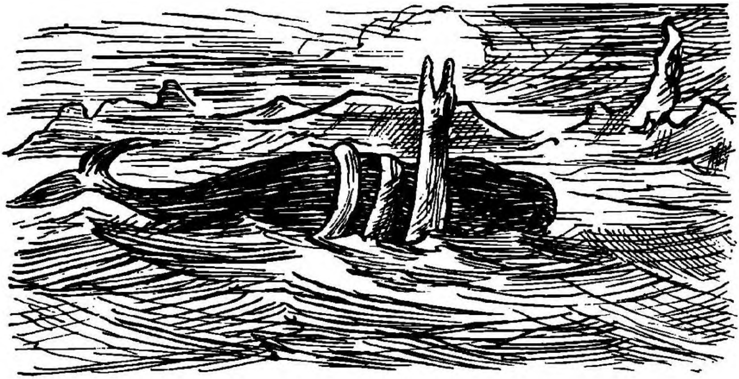
Neither the two admirals who saw it, nor the one who was interested enough to inquire about it, seem to have breathed a word about it—such was the sea-serpent's reputation at the time. The only hint I can find of it before 1906 is a letter Captain Basil Cochrane, R.N., who had been on the *Orontes* at the time, wrote to a merchant captain, George Drevar, who had been ridiculed in the press because he said he had seen a sea-serpent.

On 8 July 1875 the barque *Pauline*, commanded by Drevar, was twenty miles off Cap São Roque, when the whole crew saw a duel to the death between a sperm-whale and what seemed to be a huge serpent. Five days later another similar monster—the same one, they thought—was seen some 200 yards from the ship.

When the cargo reached its destination, the British Naval stores in Zanzibar, the story got around and was heard by the Rev. D. L. Penny, chaplain to H.M.S. *London*, who questioned the witnesses, wrote a report of what they saw and drew at their direction a sketch of this fabulous combat (about which he noted 'the whale should have been placed deeper in the water, but I should then have been unable to depict so clearly the manner in which the animal was attacked'.) Then he sent it all to the *Illustrated London News*.

Later Captain Drevar was to publish his own detailed account of the incident, and I have naturally preferred this first-hand version from the *Pauline*'s log-book of 8 July 1875:

> The weather fine and clear, wind and sea moderate. Observed some black spots on the water, and a whitish pillar, about thirty feet high above them. At the first glance I took all to be breakers as the sea was splashing up fountain-like about them, and the pillar a pinnacle rock, bleached with the sun; but the pillar fell with a splash, and a similar one rose. They rose and fell alternately in quick succession, and good glasses showed me it was a monstrous sea-serpent coiled twice round a large sperm-whale. The head and tail parts, each about thirty feet long, were acting as levers, twisting itself and victim round with great velocity. They sank out of sight about every two minutes, coming to the surface still revolving; and the struggles of the whale and two other whales, that were near, frantic with excitement, made the sea in their vicinity like a boiling cauldron; and a loud and confused noise was distinctly heard. This strange occurrence lasted some fifteen minutes, and finished with the tail portion of the whale being elevated straight in the air, then waving backwards and forwards, and lashing the water furiously in the last death struggle, when the body disappeared from our view, going down head foremost to the bottom, where no doubt it was gorged at the serpent's leisure; and that monster of monsters may have been many months in a state of coma, digesting the huge mouthful. Then two of the largest sperm-whales that I have ever seen moved slowly thence towards the vessel, their bodies more than usually elevated out of water, and not spouting or making the least noise, but seeming quite paralysed with fear; indeed, a cold shiver went through my own frame on beholding the last agonizing struggle of the poor whale that had seemed as helpless in the coils of the vicious monster as a small bird in the talons of a hawk. Allowing for two coils round the whale, I think the serpent was about



56. The *Pauline* sea-serpent, 1875, after Rev. D. L. Penny

> 160 or 170 feet long, and 7 or 8 feet in girth. It was in colour much like a conger-eel;[1] and the head, from the mouth being always open, appeared the largest part of its body.

Captain Drevar naturally did not expect to see the monster again. But 'at seven A.M., July 13, in the same latitude, and some eighty miles east of San Roque I was astonished to see the same or a similar monster. It was throwing its head and about 40 feet of its body in a horizontal position out of water as it passed onwards by the stern of our vessel.'

He wondered why they had two visits from this strange beast, 'and concluded that the band of white paint, two feet wide above the copper, might have looked like a fellow-serpent to it, and, no doubt, attracted its attention'.

Then there was a cry of 'There it is again!'

> As I was not sure it was only our free board it was viewing, we had all our axes ready, and were fully determined, should the brute embrace the *Pauline*, to chop away for its backbone with all our might, and the wretch might have found for once in its life that it had caught a Tartar.

He felt these fears were justified since 'a vessel, about three years ago, was dragged over by some sea-monster in the Indian Ocean'. He is clearly referring to the story of the schooner *Pearl* being sunk by a giant squid, mentioned on page 76, though it was even more recent than the captain thought.

At first sight Captain Drevar's story reminds one of this animal. *Architeuthis* and the sperm-whale are natural enemies. The 'serpent's' coils and tail could have been a squid's arms. And the head which 'appeared the largest part of its body' could be the swelling at the end of a tentacle. The dimensions given are not much larger than the biggest specimens measured, and we have good reason for thinking there are larger ones. In 1875 the giant squid was only just beginning to be known as dying specimens were washed up in Newfoundland. There was no reason why Captain Drevar should have heard of it, and if he had he might well have thought it more improbable than the sea-serpent. He therefore assumed that what he saw was a sort of marine boa-constrictor of fantastic size and speculated on the months that it might take to digest its 'mouthful'. And I think he was probably right.

The monster has two features which cannot belong to an *Architeuthis*: 'the mouth being always open' and the colour of darkish brown above and white below. This is clearly and correctly shown on Penny's drawing, which corroborates the description. Most people are tempted to draw a constrictor winding with its belly towards its victim—which is quite impossible, since a reptile cannot bend in that direction—whereas they always coil laterally, as Penny has shown it doing.

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[1] Penny says: 'Its colour was darkish brown, and its belly white.'

Nor did the monster look like a squid when it appeared the second time. It might not, of course, have been the same animal, but to meet two such unusual animals as an *Architeuthis* and a sea-serpent within a week would be almost too extraordinary. Was the monster really a snake? A huge freshwater snake might be carried twenty miles out to sea by the current. To encounter it again eighty miles offshore would be much more improbable, but not impossible. The colour is not at all like that of the anaconda, the largest of South American—and indeed of all—snakes, which may be as much as 46 feet long.

Personally I think it was more likely some kind of giant eel, which its conger's coloration also suggests. These serpentine fish are immensely powerful constrictors, as one can see by the way a wounded moray can bend a skin-diver's harpoon. Sperm-whales are known to dive deep and travel with open jaws for squids and suchlike prey. Perhaps the whale the *Pauline* met brought up from the depths some eel-like fish whose strength it had underestimated. Moreover we shall soon hear more of giant eels.[1]

In any case it is absurd to suppose that the two coils around the whale could be the neck alone of an animal with a bigger body, and that the monster could be a plesiosaur or an unknown mammal. The neck is only relatively flexible. The prehistoric saurians could not bend their necks into a complete circle, nor can birds like swans and darters do so—let alone into two circles. I therefore cannot understand how Dr Oudemans was able to treat the *Pauline* monster as a specimen of his sea-serpent.

The press naturally had a lot of fun at the expense of Captain Drevar. His ship had sailed for Akyab in Burma, and on 15 January 1876 he was provoked to write a stinging reply from Chittagong to the *Calcutta Englishman*:

> I can laugh and joke on the subject as well as anyone, but I can't see why, if people can't fairly refute my statement, they should use falsehood to do so. The *Daily Telegraph* says, 'The ribs of the ill-fated fish were distinctly heard cracking one after the other, with a report like that of a small cannon; its bellowings ceased, &c. To use the eloquent words of the principal spectator, it "struck us all aghast with terror".' If the writer knew anything of sailors, he would not write such bosh. Fear and terror are not in Jack's composition; and such eloquent words he leaves to such correspondents as described the ever-doubtful 'man-and-dog fight.' I am just as certain of seeing what I described, as that I met the advertisement that the *Telegraph* has the largest circulation in the world staring at me at every street

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[1] In 1876 Commander Hugh McN. Dyer, R.N., reported in his book, *The West Coast of Africa*, that on 26 July 1872 he several times saw from H.M.S. *Torch*, then at anchor off Cape Coast (Ghana), 'a large eel-shaped fish, with dark brown and white belly, put its head . . . about twenty or thirty feet into the air' and come down 'with a great thwack on the water', followed shortly afterwards by a sixty-foot bottle-nosed whale jumping clear out of the water.

> corner in London. It is easy for such a paper to make any man, good, great, or interesting, look ridiculous. Little wonder is it that my relatives write saying that they would have seen a hundred sea-serpents and never reported it; and a lady also wrote that she pitied anyone that was related to anyone that had seen the sea-serpent.

As soon as the *Pauline* returned to Liverpool Captain Drevar went before a Justice of the Peace, T. S. Raffles, and on 10 January 1877 he and his men swore to the truth of their story. Their affidavits merely repeat the captain's account in a condensed and dry legal form and need not be quoted here. They are signed by George Drevar, Master; William Lewarn, Steward; Horatio Thompson, Chief Officer; J. H. Landells, Second Officer; and Owen Baker, Seaman.

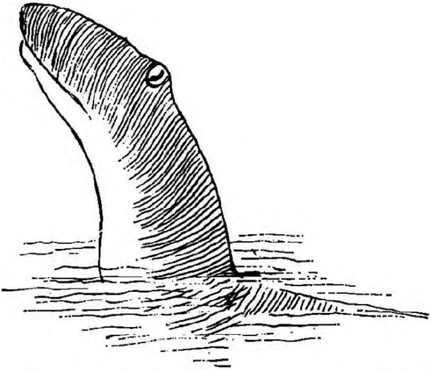
We now return to New England for a new appearance of the Massachusetts sea-serpent, but this time, it being the British Period, our guide is that talented writer of popular natural history, the Rev. John George Wood. In 1884 he published in the *Atlantic Monthly* one of the best articles on the sea-serpent ever written. He had travelled in America in 1883 on a lecture tour, and he had long been interested in the subject. When in England he had regretted that he had not been in Boston when the beast visited those shores.

> But as I had at that time no more idea of visiting America than of taking a journey to the Pole Star, the sea-serpent had so nearly faded from my memory that when I did at last find myself in Boston I failed to connect the locality with the serpent. But a few days after my arrival, while Dr. J. C. Warren was conducting me over the invaluable collection ... I came on the portrait of the sea-serpent itself.

This led him to seek out the people who had seen the animal eight years before and to hear their accounts of it.

> The narrative which had startled the zoological world was simply this: Some persons on board the yacht Princess had the temerity to see, between Nahant and Egg Rock, a marine creature exactly corresponding with those which had been viewed in the same locality twenty-four years back. They even had the audacity to watch it for two consecutive hours, and to come so close to it that they could look into its mouth. Worse than all, they actually sketched it, wrote the account of their adventure, and attested the document with their signatures ...
>
> Perhaps the most unpardonable point of all is that the passengers in question are not ignorant and superstitious sailors, but residents, who are widely known and respected. They are as follows: Mr. Francis W. Lawrence and Mrs. Lawrence; the Rev. Arthur Lawrence, rector of St. Paul's Church, Stockbridge, Mass.; and Mrs. Mary Fosdick. Then, there are the two sailors, Albion W. Reed and Robert O. Reed.

A few days after the event the Rev. Arthur Lawrence had written the following report.



57. The yacht *Princess*'s sea-serpent, 1875, as drawn by the witnesses

> On the 30th of July, 1875, a party of us were upon the yacht Princess, and while sailing between Swampscott and Egg Rock, we saw a very strange creature. As nearly as we could judge from a distance of about one hundred and fifty yards, its head resembled that of a turtle or a snake, *black above and white beneath*. It raised its head from time to time some six or eight feet out of the water, keeping it out from five to ten seconds at a time. At the back of the neck there was a fin, resembling that of a black-fish, and underneath, some distance below its throat, was a projection which looked as if it might have been the beginning of a pair of fins or flippers, like those of a seal. But as to that, we could not be sure, as the creature never raised itself far enough out of the water to enable us to decide. Its head seemed to be about two and a half feet in diameter. Of its length we could not judge, as only its head and neck were visible. We followed it about for perhaps two hours. It was fired at repeatedly with a Ballard rifle, but without apparent effect, though one ball seemed to strike it. It was seen and watched by the whole party upon the yacht.

The signatures follow.

The Boston Society of Natural History prepared a list of thirty-four questions which were submitted to Lawrence and which he answered with scrupulous care. His answers add nothing to the original report except for his opinion about what the animal was.

> I should suppose it to be one of the saurian family. It seemed to me to be neither a fish, snake, nor turtle. If such a thing as an ichthyosaurus[1] is extant, I should think this creature to be one of the same family.

[1] 'Ichthyosaurus' is not to be taken here in its strict zoological sense, but with its etymological meaning of 'fish-lizard', i.e. water saurian.

Wood found that there had been other spectators:

> Mr. J. Kelsoe, of Swampscott, who was fishing, passed within a few hundred yards of the animal while the chase was going on, and repeats all Mr. Lawrence's statements. He was near enough to observe on the dark surface of the creature two elongated white marks, about six feet in length, six inches wide, and having the ends rounded. Mr. J. P. Thomas, another fisherman of Swampscott, saw the same creature, and said that it came slowly out of the water, like a large mast.

In a Bridgetown, New Jersey, newspaper Wood found a letter which confirmed the other evidence. It was signed by Captain Garton, pilot of the steamer *Norman* and told how less than a fortnight earlier he had seen a very similar animal thirty miles south of Swampscott Bay.[1] On the evening of 17 July 1875 his ship was off Plymouth when a strange serpentine creature swam rapidly towards him. It seemed to be chasing a big swordfish.

> The head of the monster was raised at least ten feet above the ocean, but remained stationary only a moment, as it was almost constantly in motion; now diving for a moment, and as suddenly, reappearing to the same height. The submarine leviathan was striped black and white, the stripes running lengthways, from the head to the tail. The throat was pure white, and the head, which was extremely large, was full black, from which, just above a lizard-shaped head, protruded, an inch or more, a pair of deep black eyes, as large as ordinary saucers. The body was round, like a fish-barrel, and the length was more than one hundred feet. The motion was like that of a caterpillar, with this exception: that the head of the snake plunged under the water, whereas the head of the worm merely crooks to the ground.

This description, though a little less sober than the others, includes the same essential features, down to the lateral stripes seen by Mr Kelsoe. The most interesting point is the comparison of its motion to a caterpillar's.

There was also a passenger on the steamer *Roman*, plying from Boston to Philadelphia that day, who saw it 400 yards away and gave a similar description, except that this time the swordfish was chasing the sea-serpent:

> When the sword-fish first attacked him he reared his head at least ten feet above the water, and then dove down once more. These actions he kept repeating, so that we had a fine opportunity to scrutinize him. His head was rather flat, and closely resembled that of a turtle. The fin we first observed was on the back, several feet from the head, while small fins protruded on each side. The body was at least eighty inches in diameter, and presented a shiny surface, covered with large, coarse scales. When he moved his head, the water seemed to fairly boil as he rapidly clove his way through the wave, so that by far the largest portion of his body must have been under the water. We estimated his length to be at least sixty feet, but the pilot informed us that a few weeks previously he rose alongside the steamer Roman, and they reported him to be 120 feet long.

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[1] Wood also learnt that in 1849 a sea-serpent 80 to 100 feet long had been seen by J. Marston of Swampscott.

Nine years later another report of a sea-serpent in Massachusetts Bay at about this time was given to Wood by the marine painter George S. Wasson, who had seen a monster off Gloucester from his yacht *Gulnare* with his friend B. L. Fernald on 15 July 1877.

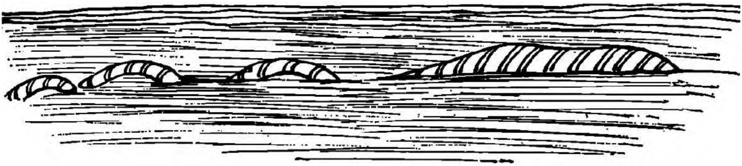
> The day was hazy, with light breeze from the southeast. When we were, as I should judge, about two miles off the mouth of Gloucester harbor, the monster came to the surface about the eighth of a mile to leeward of us. I was looking that way, and saw him appear, but Mr. Fernald did not, the first time. He immediately noticed the surging noise made, and, turning, exclaimed, 'What ledge was that which broke?' This is exactly what the sound most resembled,—a heavy ground-swell breaking over a submerged ledge; and the creature itself looked, both in shape and color, more like a ledge covered with kelp than anything else we could think of, though from the extreme roughness of the surface I remember that we both spoke of its being somewhat like a gigantic alligator. The skin was not only rough, but the surface was very uneven, and covered with enormous humps of varying sizes, some being as large as a two-bushel basket. Near one end was a marked depression, which we took to be the neck. In front of this, the head (?) rose out of the water perhaps half as high as the body, but we saw no eyes, mouth, fins, or the slightest indication of a tail. It impressed us above all as being a shapeless creature of enormous bulk. I suppose its extreme height out of the water might have been ten feet, certainly not less; and as it disappeared the water closed in over it with a tremendous roar and surge and spray, many feet into the air. The water for a large space where it had been remained white and seething with foam for some little time. From the way the water closed in over it, and the great commotion caused by its disappearing, we judged of its immense bulk, and we also concluded that it went down perpendicularly. It apparently rose in the same way. The largest whale I ever saw did not make a quarter part of the noise and disturbance in the water that this creature did. In concluding I will add that Mr. Fernald has followed the sea for fifteen years as a fisherman, and is perfectly familiar with all the cetaceans that appear on our coast.

In his replies to the Boston Society of Natural History questionnaire, which Wood sent to him, Wasson said that the visible part of the animal was 40 to 60 feet long, its colour brown and its speed 5 or 6 knots.

We cannot, of course, be certain that this is the same animal that was seen two years before. It may not even be one of the same species, but it probably is, since it was seen near the same place and since a particular type of serpentine animal seems, for some reason, to have had a fondness for Massachusetts Bay. Wasson, in fact, regretted that his description 'did not fit' with that of the earlier witnesses, to which Wood replied, that he was not trying 'to make theories fit, but to lay facts before the reader'. Moreover the differences between Lawrence's and Wasson's reports were more apparent than real: 'the former saw nothing but the head and shoulders, whereas the latter saw nothing but the back'.

The value of Wood's article was not only in collecting these reports. He also enables us to settle two serious contradictions, about the New England sea-serpent. Is its skin rough or smooth? Does it have humps or fins? We shall find Wood's conclusions on these subjects extremely penetrating when we come to them in due course.

Meanwhile we cannot expect all the reports of sea-serpents to help to bring the creature clearer into focus. The sea-monster that the steamer *Nestor* of the Lamport and Holt Line of Liverpool met in 1876 once again takes us away from the traditional types. But it was in the Indian Ocean, where we have yet to find an acceptable sea-serpent. Nor perhaps is this one, but, as the principal witness was rash enough to use the fatal word, it has found its way into most of the works on the subject.



58. The *Nestor* sea-serpent, 1876, after Captain Webster

When the *Nestor* anchored in Shanghai, the *Straits Times Overland Journal* reported on 18 September 1876 that the ship's doctor and a passenger said they had seen a strange sea-monster between Malacca and Penang, whereupon the captain, John K. Webster, wrote to the newspaper that he could vouch for this story, since he had been on deck with the chief officer and third officer when they saw 'a sea monster answering to the popular idea of a sea-serpent'. There follows a brief account of the monster, which unfortunately is not in the least like the usual description of a sea-serpent, but is none the less interesting for that. Here is the official account which Captain Webster and Dr James Anderson, ship's surgeon, swore before Donald Spence, Acting Law Secretary to the British Supreme Court in Shanghai.

> On September 11, at 10.30 a.m., fifteen miles north-west of North Sand Lighthouse, in the Malacca Straits, the weather being fine and the sea smooth, the captain saw an object which had been pointed out by the third officer as 'a shoal!' Surprised at finding a shoal in such a well-known track, I watched the object, and found that it was in motion, keeping up the same speed with the ship, and retaining about the same distance as first seen. The shape of the creature I would compare to that of a gigantic frog.[1] The head, of a pale yellowish colour, was about

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[1] From the description it seems clear that Captain Webster means 'a gigantic tadpole'.

> twenty feet in length, and six feet of the crown were above the water. I tried in vain to make out the eyes and mouth; the mouth may, however, have been below water. The head was immediately connected with the body, without any indication of a neck. The body was about forty-five or fifty feet long, and of an oval shape, perfectly smooth, but there may have been a slight ridge along the spine. The back rose some five feet above the surface. An immense tail, fully one hundred and fifty feet in length, rose a few inches above the water. This tail I saw distinctly from its junction with the body to its extremity; it seemed cylindrical, with a very slight taper, and I estimate its diameter at four feet. The body and tail were marked with alternate bands of stripes, black and pale yellow in colour. The stripes were distinct to the very extremity of the tail. I cannot say whether the tail terminated in a fin or not. The creature possessed no fins or paddles so far as we could perceive. I cannot say if it had legs. It appeared to progress by means of an undulatory motion of the tail in a vertical plane (that is, up and down).

In reporting this account in the *Echo* of 15 January 1877, the English astronomer Richard A. Proctor, who was also a sea-serpent fancier, added:

> Mr. Anderson, the surgeon, confirmed the captain's account in all essential respects. He regarded the creature as an enormous marine salamander. 'It was apparently of a gelatinous (that is, flabby) substance. Though keeping up with us, at the rate of nearly ten knots an hour, its movements seemed lethargic. I saw no legs or fins, and am certain that the creature did not blow or spout in the manner of a whale. I should not compare it for a moment to a snake. The only creatures it could be compared with are the newt or frog tribe.'

Captain Webster may be forgiven for thinking that this striped animal was a sea-serpent, but Dr Oudemans should have known better than to pretend that it was his own particular version of one. This he can do only by means of mental gymnastics. 'This is one of the few reports,' he says, 'of the animal having been observed swimming in full length on the surface of the water.' But why was no neck visible? 'I firmly believe that this is also one of the few occasions that the animal swam with its neck contracted.' It is as hard to see how his creature with a long neck could contract it, any more than a giraffe could shrink itself to an okapi or a swan to a duck. He explains the stripes as follows:

> I conclude that the animal having swum for some time in this manner, had been partly dried up in the sun, while 'catspaws' washing over it again coloured it black here and there.

But, as the captain also stated, it was watched for far too long for this far-fetched argument about accidental coloration to make any sense at all:

> The animal, or whatever it may be called, appeared careless of our proximity, and went our course for about six minutes on our starboard side, and then finally

> worked round to our port side, and remained in view, to the delight of all on board, for about half an hour.

What, then, was the *Nestor* monster? Dr Andrew Wilson thought in view of its 'gelatinous (that is flabby) substance' that 'a giant cuttle-fish, whose manner of swimming, colour, absence of limbs, etc., would correspond with the details of the narrative'. But Webster described a single cylindrical tail—not a bundle of tails. And who ever saw an *Architeuthis* striped like a zebra?

An even more preposterous suggestion was made in a letter to the *Celestial Empire* of Shanghai:

> The monster seen by the *Nestor*, however, was probably one of the Chelonidae, 'the father of all the turtles,' as he is fitly called by the natives of Sumatra, who fully believe in his existence, and to whom he occasionally appears. Indeed, Baumgarten, in his *Malaysien*, published at Amsterdam in 1829, describes the monster, and estimates its length and breadth at one hundred and twenty and thirty cubits respectively, measurements which agree very nearly with those given by Captain Webster.

I have yet to meet a turtle with a long tail like the *Nestor* monster, but 'the father of all the turtles' of Sumatra is not irrelevant to the sea-serpent in general. The *aspidochelone* or snake-turtle of Antiquity was probably some kind of sea-serpent, and we shall find several sea-monsters likened to giant turtles.

The only sensible suggestion made at the time about the *Nestor* monster was that put forward by Proctor:

> The animal ... may possibly belong to some class related to the skate. An enormous creature of the skate tribe, without spines, and with small eyes, would present an appearance closely corresponding to the description given by Captain Webster. The mouth and gills of the skate are on the ventral or under surface, and the back-fins of the tail are often very small. But a skate having a total length of two hundred feet would be as great a novelty in zoology as a monstrous marine salamander.

True. Though the length of an animal seen in the sea may be exaggerated if it makes a big wake. This suggestion of a giant ray reminds one of another selachian, the whale-shark, for no other fish has a head more like a salamander's. Its relatively low dorsal fin could be described as 'a slight ridge'. Its tail fin stretches a long way back and could leave a wake that made it seem longer. And on the body and tail of this shark the light patches are regularly arranged as if on a grid—hence the local Cuban name of *pez dama*, or 'chequerboard fish'. Seen from the side the transverse rows of spots seem to run together to make yellow stripes on a black background.

Of course, no known whale-shark is 200 feet long, but might not the 150-foot tail be merely its wake? Or perhaps, since it seemed striped to the end, a litter of young ones might be following their mother who had just given birth.

After all, in 1876 the whale-shark was almost unknown. Ten years earlier Theodore Gill, the great American ichthyologist, had described a specimen caught in the Gulf of California as if it were something quite new. That the *Nestor* monster was a whale-shark is only a tentative suggestion. It may really have been an unknown animal stranger even than the sea-serpent. This is what some other similar reports seem to imply.

The next monster seen in the Indian Ocean was no whale-shark—but nor was it a familiar type of sea-serpent. The crew of the barque *Georgina* saw on 21 May 1877, west of Sumatra, what they described as 'a large serpent about forty or fifty feet long, grey and yellow in colour, and ten or eleven inches thick'.[1]

Its proportions, especially its relative thinness, make me wonder whether it was not just a big python on a jaunt at sea. Or was it the tail part of an animal like the *Nestor*'s?

For the unprejudiced student such unusual-looking monsters as the *Nestor*'s and the *Georgina*'s need not affect our study of the classic sea-serpent as seen in New England, Norway and Scotland. It is more difficult when we cannot be certain whether it was one of these animals or not. The monster seen from the Royal Yacht *Osborne* was such a case, and, because of the people concerned, was as important as the *Daedalus* affair.

In May 1877 the commanding officer of the yacht, Commander Hugh L. Pearson sent to Admiral Sir George Elliott, Commander-in-Chief at Portsmouth, a detailed report of a 'Sea Monster' recently seen off Cape Vito on the North Coast of Sicily. It consisted of four reports, by Pearson himself, Lieutenant William P. Haynes, Lieutenant Douglas M. Forsyth and William Moore, the second engineer. The most detailed is that of Haynes, who was on watch when the animal was seen on 2 June 1877:

> On the evening of that day, the sea being perfectly smooth, my attention was first called by seeing a ridge of fins above the surface of the water, extending about thirty feet, and varying from five to six feet in height. On inspecting it by means of a telescope, at about one and a-half cables' distance, I distinctly saw a head, two flappers, and about thirty feet of an animal's shoulder. The head, as nearly as I could judge, was about six feet thick, the neck narrower, about four to five feet, the shoulder about fifteen feet across, and the flappers each about fifteen feet in length. The movements of the flappers were those of a turtle, and the animal resembled a huge seal, the resemblance being strongest about the back of the head. I could not see the length of the head, but from its crown or top to just below

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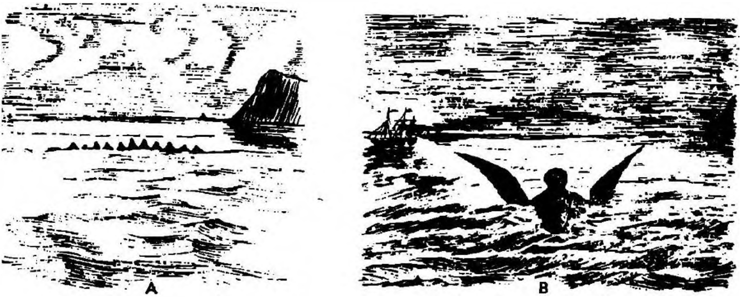
[1] We have no details of the sea-serpent that Charles Gould reported in 1886 had been seen in this area by Captain Douglas, 'late Resident of Perak' and a Malay boat's crew.

> the shoulder (where it became immersed), I should reckon about fifty feet. The tail end I did not see, being under water, unless the ridge of fins to which my attention was first attracted, and which had disappeared by the time I got a telescope, were really the continuation of the shoulder to the end of the object's body.
>
> The animal's head was not always above water, but was thrown upwards, remaining above for a few seconds at a time, and then disappearing. There was an entirely absence of 'blowing' or 'spouting.' I herewith beg to enclose a sketch (A) showing the view of the 'ridge of fins,' and (B) of the animal in the act of propelling itself by its two fins.

The other two reports merely confirm this one, and differ only in estimates of certain lengths.

Haynes's two sketches were printed in the *Graphic* on 30 June with an account of the incident. Meanwhile *The Times* had also published its own version of the incident:

> The *Osborne* was steaming westward at 10½ knots an hour, and, having a long passage before her, could not stay to make minute observations.
>
> The fins were progressing in an eastwardly direction, and as the vessel more nearly approached them, they were replaced by the foremost part of a gigantic sea monster. Its skin was, so far as could be seen, altogether devoid of scales appearing, rather to resemble in sleekness that of a seal. The head was bullet-shaped, with an elongated termination, being somewhat similar in form to that of a seal, and was about six feet in diameter. Its features were only seen by one officer, who described them as like those of an alligator.



59. Two views of the *Osborne* sea-serpent, 1877

The Times even went so far as to give its own explanation of why the monster had emerged from the abyss, in which for some reason it was supposed to live:

> The appearance of the monster is accounted for by a submarine volcano, which occurred north of Galita, in the Gulf of Tunis, about the middle of May, and

> was reported at the time by a steamer which was struck by a detached fragment of submarine rock. The disturbance below water, it is thought probable, may have driven up the monster from its 'native element,' as the site of the eruption is only 100 miles from where it was reported to have been seen.

As R. T. Gould, who was to break many a lance on the sea-serpent's behalf, shrewdly remarked, 'The suggestion about the submarine volcano, of course, is sheer "*post hoc, propter hoc*".'

The Admiralty passed the reports on to the Home Office 'for an expression of opinion from the Inspector of Fisheries, Mr. F. Buckland'. Buckland in turn submitted them to four experts from different walks of life: Professor Owen, still the highest authority in zoological matters; A. D. Bartlett, Superintendent of the Zoological Gardens; Captain David Gray of the whale-ship *Eclipse* of Peterhead, who had hunted whales and seals for thirty years; and Henry Lee the naturalist in charge of the Brighton Aquarium. The results of these inquiries were published in *Land and Water* on September 8.

And what had the experts to offer? Owen had nothing. Twenty-nine years earlier he had taken some trouble to analyse the features of the *Daedalus* monster and to identify it. This time he merely sneered at the witnesses. He could hardly doubt their good faith, so he openly accused them of incompetence and negligence. With age he had grown more and more intolerant and was now quite cantankerous.

> The discrepancies in the records of the watchers of the same phenomena show the difficulty of exact observation at the distances and under the circumstances of the case, both ship and object or objects being on the move; and remarks thereon by observers not conversant with natural history, and so situated, preclude the formation of any opinion worth recording of the nature of the object or objects causing the phenomena as interpreted by the foregoing witnesses.
>
> But although the statements and terms applied be insufficient to enable the naturalist to recognise the subject thereof, they by no means afford ground for concluding that what was seen was afforded by an object unknown and unrecorded in natural history; there are no grounds for calling it a 'sea monster.' I beg to call attention to the paragraph concluding the 'Manual of Zoology' in the 'Admiralty Manual of Scientific Enquiry,' 12mo, 3rd. ed., 1859.

He continues in this sergeant-instructor's vein, adding that 'If the observer has not the zoological knowledge, or the opportunity for exact inspection, requisite for determining the species from the phenomena, he should abstain from giving the object any special name.' He would rather, it seems, call it 'object', or even 'thingmejig', than prejudice scientific research by using more appropriate terms like 'sea monster' or 'strange beast'. Yet Cuvier, whom Owen considered as his master, did not scruple to call the plesiosaur a 'monster'.

Frank Buckland begins his opinion by saying that he does not believe in the sea-serpent—an irrelevance since we are not dealing with belief but with facts. He then argues that if it existed its body would have been found.[1] He recalls that various sea-serpents have proved to be tree-trunks or oarfish and that others can be explained as faulty observations of giant squids, turtles, seals or congers. He then concludes that these 'monsters' can always be explained as known animals. And the *Osborne* 'monster':

> Possibly I may be wrong, but my theory is that the phenomenon was caused by *three or four basking sharks swimming in a line one behind the other.* The dorsal and caudal or tail fins of these huge fish projecting above the surface of the water might give the appearance as shown in the drawing (A). The drawing (B) would probably represent the head of the shark as seen from behind.

While his explanation of drawing B is hard to defend (how does he account for the oar-like side fins?), that of A is quite plausible. Indeed at first sight it is hard to reconcile the two drawings and apply them to the same animal. The row of irregularly unequal triangular fins could belong to several animals such as a school of sharks or cetaceans. The animal in B, on the other hand, seems to have a smooth back and to be a thin-necked unknown sea-creature, which is perhaps fleeing from the others. This would explain why its fins were seen out of water, which is clearly unusual. If it were attacked from below it might try in its terror to rise above the waves and so beat its fins in the air.

Nevertheless I think it is possible to reconcile the two drawings without there being two lots of animals. One need only suppose that the row of triangular fins that were seen out of the water was two rows (which might explain their alternation in size) not on the animal's back but along its sides.

This reminds us at once of the extraordinary sea-serpent seen from the *Princess* in 1856, and that strange animal with numerous lateral fins which Rondelet called the cetacean centipede and Aelian the great sea-centipede.

To return to the experts' opinions. Captain Gray contradicts not only Buckland but himself, too. He says that B 'exactly represents a Greenland whale going away from the spectator' but that it is half the size, it cannot raise its fins in this manner, and the fins are different in size and shape. 'Exactly represents' indeed! He goes on to say that he has known experienced seamen make huge blunders, mistaking a walrus, seal or narwhal for a whale. And he concludes that the officers of the *Osborne* must likewise have been mistaken and actually have seen several animals swimming together and raising different parts of their bodies.

Bartlett, the Superintendent of the Zoo, is not so dogmatically sceptical.

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[1] I shall deal with this argument in the last chapter, but meanwhile will only say that there are innumerable sea-animals whose bodies have never been found washed up.

On the contrary, having eliminated the known animals that it might have been, he is forced to conclude that it is a creature quite unknown to the naturalist and to presume

> that in the vast and mighty ocean animals, perhaps of nocturnal habits (and therefore never, except by some extraordinary accident, forced into sight), may exist, whose form may resemble the extinct reptiles whose fossil remains we find in such abundance.

To which Bartlett adds an argument which is certainly debatable, and to my mind unnecessary given the size of the 'vast and mighty ocean':

> One thing is certain, that many well-known reptiles have the power of remaining for long periods (months, in fact) at the bottom, under water or embedded in soft mud, being so provided with organs of circulation and respiration that they need not come to the surface to breathe.[1]

Henry Lee's view is fairly similar to Bartlett's. He thinks that to maintain that all sea-serpents are due to known animals not being recognized is 'to assume that the stay-at-home naturalist has perfect cognisance of every existing marine animal of large size, and that the sea-going eye-witness is so inexperienced and uninstructed that his assertion that what he saw was none of these, is worthless'. He recalls that the recent soundings of the *Lightning*, *Porcupine* and *Challenger* had dredged up innumerable new species, some of which had been thought extinct since the Cretaceous Period. And he concludes:

> I therefore think it by no means impossible—first, that there may be gigantic marine animals unknown to science having their ordinary *habitat* in the great depths of the sea, only occasionally coming to the surface, and perhaps avoiding habitually the light of day; and, second, that there may still exist, though supposed to have been long since extinct, some of the old sea-reptiles whose fossil remains tell of their magnitude and habits, or others of species unknown even to paleontologists.

These various opinions give a good picture of naturalists' attitude to the sea-serpent in the middle of the British Period. For the unbelievers the monster is always merely a known object or living creature poorly observed and wrongly interpreted. But for those who believed it was an animal unknown to science it was probably a great reptile from a past age, and one which lived in the great depths.

The beliefs of the sea-serpent's supporters were inspired by the fashion of the day. The discovery of bones of the great saurians in Britain in the first half of the nineteenth century, and in America in the second half, had fired everyone's imagination. And now the great oceanographic voyages had opened a porthole on to the mysterious world of the great depths. Therefore if the Great Unknown existed it must be composed of the two unknowns that were just beginning to come to light, the age of reptiles in the Secondary Era, and the great depths, and be a gigantic saurian of the abyss. This is probably a contradiction in terms since only small or flimsy creatures seem able to stand the terrifying pressures there. But science is as susceptible to fashion as hats, literature or dance-steps.

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[1] Bartlett is obviously referring to the habits of some amphibians. It was only gradually during the nineteenth century that the division between reptiles and amphibians was made.

Sea-serpents themselves seem to be as variable as fashions. On 20 October 1877 the *Sacramento* of New York cast anchor in Melbourne. Her commander, Captain W. H. Nelson told the Australian press that on 30 July in latitude 31° 59′ N. and longitude 37° W. that is in mid-Atlantic, the helmsman, John Hart, called him on deck, saying that he saw a sea-serpent. The captain did not believe him and took his time. But when he eventually appeared on deck he was surprised to find that the monster was still in sight, though moving away, and that the helmsman had had a good view of it. 40 feet of the animal was visible. It seemed to be about as thick as a flour barrel and it was yellowish in colour; its head was described as flat. The eyes were clearly visible. This was its description according to the *Argus*. But the *Australian Sketcher* managed to obtain a drawing from the helmsman which it published on 24 November with comments by the artist (Plate 42):

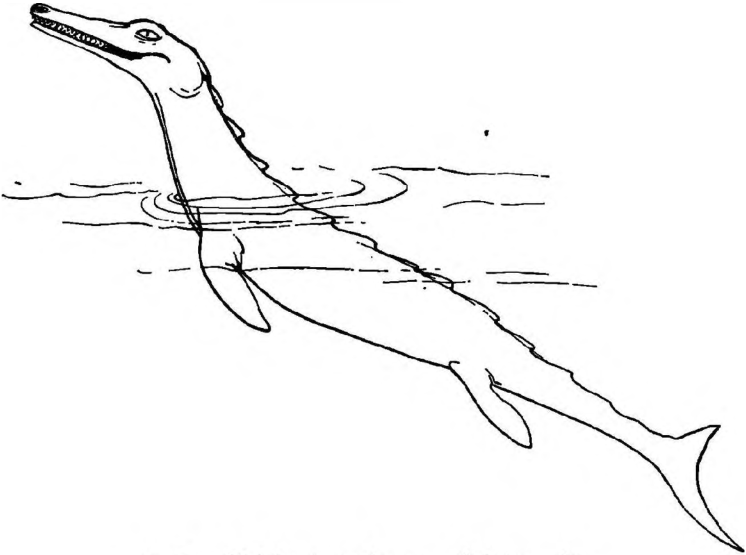
> This is a correct sketch of the sea-serpent seen by me while on board the ship *Sacramento*, on her passage from New York to Melbourne, I being at the wheel at the time. It had the body of a very large snake; its length appeared to me to be about fifty feet or sixty feet. Its head was like an alligator's, with a pair of flippers about ten feet from its head. The colour was of a reddish brown. At the time seen it was lying perfectly still, with its head raised about three feet above the surface of the sea, and as it got thirty or forty feet astern, it dropped its head.

An alligator's head is very different from the traditional description of the sea-serpent, but there is no doubt about the shape of the animal's head in Hart's drawing. Could it be a true crocodile? The only existing crocodile that habitually puts to sea is the Double-crested Crocodile (*Crocodylus porosus*). This huge reptile, which may be 20 feet long, is found in the coastal waters of the East Indies, the Malay Archipelago, Northern Australia and sometimes near the Fiji Islands, which shows that it can make long sea-voyages. It has even been seen in the Cocos Keeling Islands more than 600 miles from the nearest land. All the same it is most unlikely to find its way to the middle of the Atlantic, about 10,000 miles from its habitat.

In the past, from the end of the Jurassic to the Cretaceous, there were crocodiles better adapted to life at sea than the Double-crested Crocodile: the hind legs of these Thalattosuchia, or sea-crocodiles, were transformed into flippers; the tail, supported by a downward curving spine as in the ichthyosaurs, was enlarged at the end and was bilobate like a fish's. The survival of a thalattosuchian to the present day seems all the easier to imagine, since a large number of crocodiles have survived into the Secondary and even the Tertiary Eras. During the latter period some reached a very great size. The *Rhamphosuchus*, an Indian gavial of the Pliocene, was up to 50 feet long, and some true crocodiles (*Crocodylus*) were just as big.

Huge crocodiles have been reported in the Indian Ocean. W. H. Marshall, former editor of the *Rangoon Chronicle*, wrote in *Four Years in Burmah* in 1860:

> As the *Nemesis* was proceeding onwards toward our destination [Rangoon], our attention was directed to an alligator of enormous length, which was swimming along against the tide (here very strong), at a rate which was perfectly astonishing. I never beheld such a monster. It passed within a very short distance from us, its head and nearly half its body out of the water. I should think it could not have been less than five-and-forty feet long, measuring from the head to the extremity of the tail, and I am confident it was travelling at the rate of, at least, thirty miles an hour.

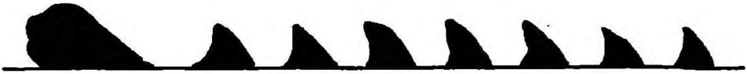


60. Crocodile belonging to the group of Thalattosuchia

No known crocodile swims with part of its body out of the water, nor at such great speed. But perhaps the Thalattosuchia, with their fish-tails, could do so, especially with the inclined axis of their bodies enabling them to rise higher out of the water.

If the Thalattosuchia had gone on evolving all through the Neozoic Era, they might have done so in the direction of size, just as many crocodiles did that survived the Mesozoic Era. Thus there is no need for Sauropterygia to have survived for us to explain certain sea-serpents like crocodiles with flippers.

Unpublished reports of sea-serpents in the Red Sea may throw some light on the *Osborne* puzzle and on the much older riddle of the Hebrew leviathan. In October or November of 1877 a monster which Captain Anderson of the *Sumatra* called a 'sea-serpent' but did not, alas, describe, was seen off Mocha. (This was the same Captain Anderson who saw one off the Breton coast when he commanded the *Delta*.) Charles Gould says that a similar animal was reported soon afterwards by a warship near Suez.



61. The *Poonah* sea-serpent, 1878, after Mrs Turner

A year later, in December 1878, Mrs Turner, the wife of a Calcutta banker, was returning to India on the P. & O. liner *Poonah*. When the ship was anchored off Suez or Aden (she could not remember which) she saw, 150 feet away, an extraordinary sea-animal, motionless on the surface. Five or six seconds later it quietly sank and did not reappear. Mrs Turner's description of the monster, together with an outline drawing of it, occurs in an unpublished letter from Robert P. Greg to Dr Oudemans, which I found in his archives. Here it is just as he wrote it:

> She says it almost exactly resembled the marine animal seen by the officers of the *Osborne*, 2 June 1877, of Sicily, only it had no flippers (being motionless); and she saw both the head and 7 or 8 fins of the back, all at the same time in a line. She cannot remember exactly how many dorsal fins there were, but they were large, slightly curved back and not all the same size. She did not notice any eyes or mouth, seeing it for such short a time, and being so much surprised at its size and a glimp. The head looked 4–6 feet diameter, like a large tree trunk say at 150 feet. The head was very glumsy and thick, and very like the butt end of a cannon, as shown in Lieut. Haynes drawing ... and without the flippers, which at once very strongly reminded her of the animal she saw. The colour was nearly black like a whale. The whole length appeared considerable, perhaps as long as an ordinary tree, or moderate sized ship! The fins were very large.

In the drawing the fins look 'similar to those in a blackfish, but turned the contrary way', to use Captain Tremearne's phrase about those on the *Princess* monster (1856). Like that beast and the *Osborne* sea-serpent (1877), the *Poonah* monster had a big round head and a fairly short neck. The way these reports agree is significant, and we must begin to take the existence of the incredible cetacean centipede seriously.

It must have been a different kind of animal that Major H. W. J. Senior of the Bengal Staff Corps saw from the afterdeck of the *City of Baltimore* in the Gulf of Aden on 28 January 1879, despite the closeness in time and place, for the animal had a very long neck like the *Carnatic* monster (1858). It is shown in Plate 43. Major Senior writes:

> So rapid were its movements that when it approached the ship's wake, I seized a telescope, but could not catch a view as it darted rapidly out of the field of the glass before I could see it. I was thus prevented from ascertaining whether it had scales or not but the best view of the monster obtainable when it was about three cables' length, that is about 500 yards' distant, seemed to show that it was without scales. I cannot, however, speak with certainty. The head and neck, about two feet in diameter, rose out of the water to a height of about twenty or thirty feet, and the monster opened its jaws wide as it rose, and closed them again as it lowered its head and darted forward for a dive, reappearing almost immediately some hundred yards ahead. The body was not visible at all, and must have been some depth under water, as the disturbance on the surface was too slight to attract notice, although occasionally a splash was seen at some distance behind the head. The shape of the head was not unlike pictures of the dragon I have often seen, with a bull-dog appearance of the forehead and eyebrow.

Major Senior's report is countersigned by two other witnesses, Miss Greenfield, a passenger, and Dr C. Hall, the ship's surgeon.

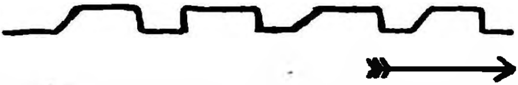
This sea-serpent seemed odder in choosing to appear in the Gulf of Aden than in its long thin neck, a feature that is natural enough if one really believes in a huge sea-snake. But in fact the long-necked type which we shall gradually come to know well, was almost unknown at this time. Logically it should have seemed stranger than the many-finned type which appeared again soon afterwards in Géographe Bay, near the south-west tip of Australia.

On the evening of 30 March 1879 a Colonial chaplain, the Rev. H. W. Brown, was riding home from Lockville along the beach when he met two friends, C. M'Guire and his wife, walking in the opposite direction. Soon afterwards he saw 'what looked like a log of wood in the water a stone's throw from the shore'. It seemed to be moving towards Lockville, leaving a wake behind it. He turned his horse and followed it until he had caught up with M'Guire and could attract his attention.

> Just as I met him the fish again came to the surface, showing gradually more and more of his length, till, when he was almost at rest, and all was apparently in view,

> I estimated the length to be 60 feet, straight and taper, like a long spar, with the butt end, his head and shoulders, showing well above the surface.
>
> I can only describe the head as like the end of a log, bluff, about two feet in diameter; on the back we noticed, showing very distinctly above water, several square-topped fins[1] ... I saw no lateral fins and no fish-tail.

A friend of Brown's, a Colonial surgeon called H. C. Barnett, sent this report to *Nature*, adding that the chaplain was an educated gentleman who had been twenty-seven years in the colony and 'of whose accuracy there can be no question'.



62. The Géographe Bay sea-serpent, 1879, after the Rev. H. W. Brown

These reports seem to show that the long-necked sea-serpent already met in the South Atlantic is also found in the Indian Ocean, and that the short-necked type with many lateral fins, hitherto seen in the Gulf of Mexico,[2] the Mediterranean (i.e. from one end of the Atlantic to the other) as well as in the Red Sea and off South Africa is also seen at both ends of the Indian Ocean, and we shall have reports from almost new zones like the North Pacific.

Hitherto the only reports from this part of the ocean have been Kotzebue's snake with a sea-lion's head and big eyes (probably a surviving sea-cow) in the far north, and Hope's flippered crocodile in the Gulf of California, near the Tropics. Here, too, things will grow more complicated.

1879 saw a new version of the *Pauline* affair, a new single combat between a big whale and what Captain Davison of the Japanese steamer *Kiushiu Maru* and his chief officer, McKechnie, thought was a sea-serpent:

> Saturday, April 5th., at 11.15 a.m. Cape Satano [Cape Satanomisaki, at the southern tip of Kiushiu, Japan] distant about nine miles, the chief officer and myself observed a whale jump clear out of the sea, about a quarter of a mile away. Shortly after it leaped out again, when I saw there was something attached to it. Got glasses, and on the next leap distinctly saw something holding on the belly of the whale. The latter gave one more spring clear of the water, and myself and chief then observed what appeared to be a large creature of the snake species rear itself about thirty feet out of the water. It appeared to be about the thickness of a junk's mast and after standing about ten seconds in an erect position, it descended into the water, the upper end going first. With my glasses I made out the colour of the beast to resemble that of a pilot fish.

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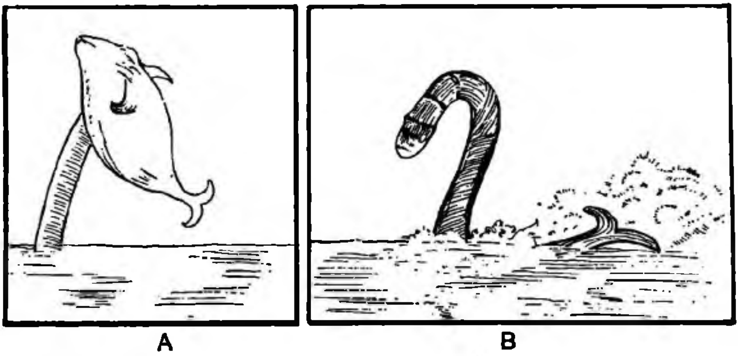
[1] These could have been flexible triangular fins with the tips bent over.

[2] It is most probable that the *St Olaf* monster was one of this type, and that it was seen turning on its side. Similar animals will be reported several times from the West Indies.

The report was accompanied by two sketches which the *Graphic* published, 'as a specimen of the curious drawings which are frequently forwarded to us for insertion in the pages of this journal'. They show a baleen-whale fighting a sort of monstrous worm that could be a swan-necked sea-serpent, an enormous conger, or the arm of a giant squid.

Since the long-necked sea-serpents are usually described as unaggressive, I incline towards the last alternative. This would also explain why Captain Davison 'saw something holding on to the belly of the whale'. An animal that fights with teeth and jaws like a conger would have found a better grip on a fin.



63. Two views of the *Kiushiu Maru* sea-serpent, 1879, after Captain Davison

Dr Oudemans, obsessed with the idea that it was a true sea-serpent of his own type, was worried by the colour. 'The description of the colour', he writes, 'as "resembling that of a pilot-fish", is very vague, for the different pilot-fishes (*Naucrates*) have different colours, generally grey with some hue of blue, brown, or purple.' It is well to recall here that *Architeuthis* is often grey shot with brown or purple—often markedly so.

The sea-serpent that Captain J. F. Cox of the British ship *Privateer* saw on 5 August 1879 100 miles west of Brest was, for once, of a much more classic type, 'It was like a great eel or snake, but as black as coal tar.' What little we know about the sea-serpent seen in 1879 by Dr C. H. Caldicott from the Holt Blue Funnel liner *Priam*, on which he was ship's doctor, also seems to be fairly conventional. He did not tell his story until seventy-four years later, when he was very old and quite blind, and an article by John Scott Hughes about a sea-serpent appearing as 'six to eight arches' and a head, was read to him by his daughter. This, extraordinary though it may seem, was the first time he had heard of a similar incident.

> One day in the Indian Ocean, [he wrote to Hughes] the 2nd officer called me up on the bridge and pointed out to me coils coming out of the water exactly as you describe in your article, except that we did not see the head. The coils were about a ¼ mile away but there was no mistaking what they were.

But the animal which the officers and men of H.M.S. *Philomel* saw on 14 October of that year looks very new—at least for a sea-serpent. It happened in the Gulf of Suez:

> When first observed it was rather more than a mile distant on the port bow, its snout projecting from the surface of the water, and strongly marked ripples showing the position of the body. It then opened its jaws, as shown in the sketch, and shut them again several times, forcing the water from between them as it did so in all directions in large jets. From time to time a portion of the back and dorsal fin appeared at some distance from the head. After remaining some little time in the above-described position, it disappeared, and on coming to the surface again, it repeated the action of elevating the head and opening the jaws several times, turning slowly from side to side as it did so. [See Plate 44.]
>
> On the approach of the ship the monster swam swiftly away, leaving a broad track like the wake of a ship, and disappeared beneath the waves.
>
> The colour of that portion of the body that was seen was black, as was also the upper jaw. The lower jaw was grey round the mouth, but of a bright salmon colour underneath (like the belly of some kinds of lizard) becoming redder as it approached the throat. The inside of the mouth appeared to be grey with white stripes, parallel to the edges of the jaw, very distinctly marked. These might have been rows of teeth, or some substance resembling whalebone. The height the snout was elevated above the surface of the water was at least fifteen feet, and the spread of the jaws quite twenty feet.

Charles Gould subsequently suggested this might be some giant species of fish closely related to *Eurypharynx pelecanoides*, that strange creature, all mouth (Fig. 41), which the French steamer *Le Travailleur* was to bring up from 1,500 fathoms in 1883. But, like all the known fishes of the abyss, *Eurypharynx* is of small size, and it is doubtful whether such very specialized creatures could have gigantic relatives in lesser depths. Personally I should not like to swear that the *Philomel* monster was not a large whale of a known species—some of them have reddish throats.

The neck a yard long and no thicker than a forearm that G. Verschuur saw rising out of the water on 21 December 1879, as the *Granada* was rounding Cape San Lucas in Lower California, could have been a large eel—or a baby long-necked sea-serpent. The ship's second officer recalled that he had seen a sea-serpent several yards long off Australia in 1871.

The straw-coloured monster that Captain Thomas U. Brocklehurst met in the middle of the North Pacific is much more of a problem. He wrote about it to R. P. Greg, who passed the letter on to Oudemans:

> 1880, August 11th. Sea smooth! Ther. 58. hot sun at noon. Lat 48.37 [N.], Long. 180. crossing from Japan to San Francisco. Sitting alone on poop of steamer *Oceanic* at noon, looking at flying fish, saw a long serpent in water 1 or 2 feet below surface, alongside the vessel, thought length 40 feet, circumference 2 to 4 feet, pale yellow colour, dark line on back and on ribs, head a little larger than body, could not see any fins, saw it for 5 or 6 minutes, and then mentioned it to friends on board.

The next encounter was also in the North Pacific, but this time near the coast of China. In 1881 J. H. Hoar of the Shanghai pilot station told Charles Gould how, when he was stationed at Ningpo, south of the mouth of the Yangtse, he once saw on the surface of the water a serpent 120 to 140 feet long 'resembling two masts of a junk end to end, but with a slight interval'. It had slate-coloured eyes 'as big as a coffee-saucer' and the top of its head was flat.

It is hard to tell whether this is one of the types of sea-serpent we already know. The big eyes and long tail remind one of a maned sea-serpent, but no mane is mentioned here.

The problem seems to get more and more confused, as more and more different types of monsters appear, until at times one can almost bear it no longer. I have often felt, during the last seven years, that it was beyond my powers to solve and that I should have to confess myself beaten. But all will become clear in the end, provided we draw no more than the most general conclusions at the moment. To try to classify the beasts too soon would give a false view of the story and lead to a dead end. 'It is a capital mistake to theorize before you have all the evidence,' says Sherlock Holmes. 'Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.'

Unfortunately this is what all those who have tackled the problem seem to have done.

We now return to the familiar maned *Sæ-orm* described by Pontoppidan, though somewhat far afield off the tip of South Africa. But we have long found this type in all the temperate waters of the Atlantic.

On 12 November 1881 C. M. Hansen, an official of the harbour office, Cape Town, was working in his garden near Mouille point when he saw a sea-serpent near the place where the *Athens* was wrecked. He at once pointed it out to his wife and children and several neighbours, who watched the monster 'viewing the coast at its ease for half an hour'. It then made off to sea.

> Mr Hansen describes this sea-monster as being about 75 feet long, of a dark colour and with a head of the size of a 54 gallon hogshead, resembling that of a bull-dog, and provided with a long and brown mane, hanging down.

The sceptics tell many stories of sailors seeing sea-serpents which turn out upon closer inspection to be a tree-trunk or some other floating wreckage. In fact, as I have pointed out, it is more often the other way about: what is taken from a distance to be a tree-trunk or flotsam proves on closer approach to be a living animal. This is what happened to Captain Weisz of the German steamer *Katie:*

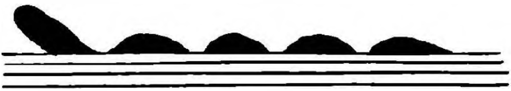
> When the Stettin Lloyd Steamer *Katie*, on her return from New York to Newcastle, on 31 May of this year [1882], shortly after sunset and in that clear light which in this season prevails in fine weather in high northern latitudes, was about eight miles west-north-west of the Butt of Lewis (Hebrides), we observed on the starboard bow, at a distance of about two miles, a dark object lying on the surface, which was only slightly moved by the waves; first we took it for a wreck, as the highest end resembled the bow and the forepart of a ship, and the remaining bumpy part resembled the broken waist of a ship filled with water. As we got nearer we saw with a glass on the left of the visible object, the water moving in a manner, as if the object extended there under the water, and this motion was of the same length as the part of the object visible above the surface. Therefore we took care, not to steer too near, lest the screw should be damaged by some floating pieces of the wreck. But on getting nearer we observed that the object was not a wreck, and, if we had not known with certainty that on these coasts there are no shallows, we should have taken this dark connected row of bumps for rocks. When, however, we changed our course obliquely from the object, which lay quite still all the time, to our astonishment there rose, about eighty feet from the visible end, a fin about ten feet in height, which moved a few times, while the body gradually sank below the surface. In consequence of this the most elevated end rose, and could distinctly be made out as the tail of a fish of immense dimensions.
>
> The length of the visible part of this animal which had not the least resemblance to the back of a whale, measured, according to our estimation, about 150 feet, the bumps, which were from three to four feet in height, and about six or seven feet distant from each other, were smaller on the tail end than on the head end, which withdrew from our observation. At our arrival at Newcastle, I learned that some days before some fishermen of Lewis had observed the same or similar animal.

Captain Weisz also had an engraving (Plate 45) done to his instructions by Andrew Schultz, the American animal-painter. It shows the familiar outline of an American many-humped sea-serpent, but of gigantic size and with two raised fins, one in the middle and one at the end.

Dr Oudemans thinks Captain Weisz wrongly interpreted what he saw, and that the ripples on the left of the part above water were caused not by its head but by its tail. He likewise thinks the central fin is really a hind flipper appearing momentarily above water and that the 'tail' fin is a front flipper. All because he refuses to admit that a sea-serpent could have a bilobate tail like a whale.

At all events this matter-of-fact report should convince those who are not yet convinced that there is a big serpentine animal with humps all along its spine—and not only on the American coast. The next report likewise confirms that when such an animal moves it does so by vertical undulations.

This time the sea-serpent appeared in Great Britain itself off Caernarvonshire before the eyes of a Justice of the Peace, a solicitor and his wife, and several other people. This happened on 3 September 1882 at three in the afternoon, when these gentlefolk were standing on Llandudno pier, looking towards the open sea, and they saw an object near Little Orme's Head and moving towards the Great Orme. In two minutes or so it traversed about half the width of the bay and must therefore have been moving at no less than thirty miles per hour. Here is the description that F. T. Mott sent to *Nature*:



64. The Orme's Head sea-serpent, 1882

> It is estimated to have been fully as long as a large steamer; say 200 feet; the rapidity of its motion was particularly remarked as being greater than that of any ordinary vessel. The colour appeared to be black, and the motion either corkscrew-like or snake-like, with vertical undulations. Three of the observers have since made sketches from memory, quite independently of the impressions left on their minds, and on comparing these sketches, which slightly varied, they have agreed to sanction the accompanying outline as representing as nearly as possible the object which they saw. The party consisted of W. Barfoot, J.P. of Leicester, F. J. Marlow, solicitor, of Manchester, Mrs. Marlow, and several others.

A similar animal was seen a month later on 11 October off Bude in Cornwall by the Rev. E. Highton, vicar of that parish. And another one was seen exactly a year later going down the Bristol Channel towards the Atlantic and afterwards off the north coast of Cornwall at the considerable speed of twenty-five miles per hour. It left a greasy trail on the water as seals and sea-lions sometimes do.

The British had no monopoly of seeing sea-serpents at this time, as we have seen from Captain Weisz. Now another German ship, the corvette *Elisabeth*, whose captain was to become Admiral Hollmann, met one off Libreville on the west coast of Africa on 26 July 1883. Hollmann noted in his log:

> Five p.m. Saw a school of cetaceans of various sizes and among them an animal the shape and movements of which recalled a big serpent. Its colour was whitish, and it often raised its head and neck 10 to 18 feet above the waves, while the rest of its body appeared in the form of numerous coils.

One of the *Elisabeth*'s officers, Kapitän-Leutnant Wislicenus, watched the strange beast for twenty minutes through binoculars. He said it was 50 to 65 feet long, had a spear-shaped head and, most surprisingly, a black and white double tail 20 feet long!

What on earth are we to make of this? We can hardly doubt Admiral Hollmann's good faith, and he has guaranteed that of his subordinates. Must we then suppose that this particular sea-serpent is not only an albino but also has an extra tail, as sometimes happens to teratoid specimens of lizards? A double freak of this kind would be really too extraordinary. In any case the black and white colouring of the tail could not be due to albinism. But perhaps Hollmann saw only the underside of the throat as the animal faced him, its head raised; a sea-serpent has been described before as looking like a white column from a distance. And may not the 'double tail' (*Doppelschwanz*) just be a bilobate tail like a whale's, which could well be black above and white below?

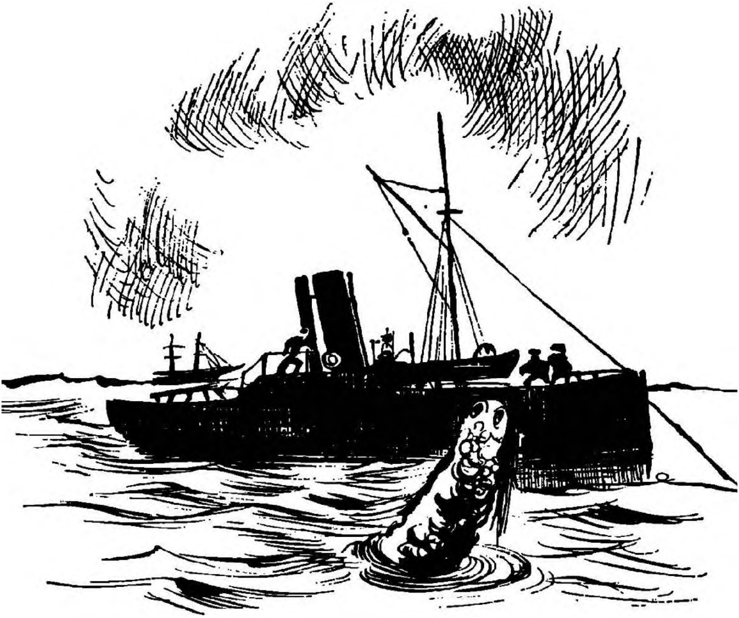
Everyone who has studied the problem of the sea-serpent has been led by the beast's name to suppose that it has a serpent's tail. But while there is no doubt that some types, Egede's 'super-otter' for instance, have a long tapering tail, we shall often find the many-humped sea-serpent described with a bilobate tail, and others with no tail at all.

There was, for instance, a double tail on the first of two other unusual sea-monsters reported in 1883. It was seen in the autumn by Captain Seymour of the American whale-ship *Hope On* near the Las Perlas archipelago south of Panama in the tropics of the Pacific. The boats had been lowered to hunt what they thought was a whale. But it turned out to be a quite unexpected sort of animal, if we are to believe Richard Proctor's account based on a newspaper of the time:

> A head like that of a horse rose from the water and then dived. The creature was seen by all the boat's crew. Captain Seymour describes the animal as almost 20 feet in length, with a handsome horse-like head, with two unicorn-shaped horns protruding from it. The creature had four legs or double-jointed fins, a brownish hide, profusely speckled with large black spots, and a tail which appeared to be divided into parts.

Even though we are told that the officers of the Pacific Mail Company said they had often seen the animal, this two-horned sea-unicorn does seem to have been singularly embellished by fancy. But I should be most surprised if it is a complete invention, for we shall find several more sea-monsters of a roughly similar description except that the horns are not like a unicorn's but short appendages more like a giraffe's, and are probably not really horns at all. And the beast's apparently divided tail is probably the fan formed by the hind flippers spread apart.

The last strange monster of 1883 was, if we are to believe the *New York Times*, a turtle of quite phenomenal size which an American schooner met off the Banks (? of Newfoundland). At first it was mistaken for the hull of a capsized boat, but when they came nearer the crew saw that it was a turtle 60 feet long and 40 feet wide—the *aspidochelone* of Antiquity and the Sumatran 'Father-of-all-the-turtles' with a vengeance!



65. The *Churchill* sea-serpent, 1884, after Lieutenant-Colonel Robley

On 31 August 1884 a somewhat less extraordinary sea-serpent was seen at Port Natal (as Durban was then called) by Captain Wellington and the watch of the steam-tug *Churchill* lying in the outer anchorage.

> ... a huge beast suddenly appeared level with the bulwarks presenting the most terrific appearance—it seemed covered with large sea shells and to have a big, hairy head; twice it appeared, and as suddenly plunged down again. The second time the whole of its body passed under the ship, and in doing so all on board assert positively that its head could be seen some distance at one side while the tail was still visible many yards away at the other; its length was estimated at 60 feet.

A sketch by Lieutenant-Colonel Robley appeared in the *South African Illustrated News* and was recently brought to light by Professor J. L. B. Smith.

In the ensuing years the situation grew no better. Sea-serpents came not only penny plain, but also twopence coloured. What are we to make of the candy-striped pink sea-serpent seen on 5 August 1885 in the middle of the North Atlantic south of the Azores by Captain Roberts of the *Emblem* of Quebec? It must, one might think, be related to those pink elephants so overworked by the humorists, but the Captain's account is too sober for that. The mate had seen an object standing up in the water:

> As the vessel approached the object was discovered to be a large monster with a serpent's head, which, with from 10 to 12 feet of its body, was raised above the surface of the water as if the animal was leisurely surveying his surroundings. When the *Emblem* approached within a few yards of the monster, he dived his head under the water, allowing, however, his body to float on the surface. Judging from the length of his vessel Captain Roberts estimates the length of the serpent at about 60 feet, while his girth is equal to that of a large pork barrel. His back was barred, pink and white, but his belly was all white.

On 16 August some lads were returning to Rödöy island from the church at Melöy, when they saw a sea-monster making straight for their boat. 'It appeared to be serpentine in shape, with a flat scaly head.' The lads counted seventeen coils on the surface of the water and estimated the length of the animal at about a hundred feet.

It was a yellow sea-serpent that was seen by eight or nine people in Morewood Bay, Umhlali, South Africa on the following 4 October:

> It was first seen [says a newspaper report] seven or eight miles from the shore, swimming in a very erect manner. From the first sight it seemed as if there were two fish, but a closer inspection proved that the rear one was the tail of the serpent. According to the account furnished by those who witnessed the sight, the monster appeared to proceed at the rate of about eight miles an hour, occasionally plunging into the water, making a noise as if a sea was breaking heavily on an open shore and causing foam to extend for about twenty yards on either side of it. It appeared to be about fifteen or twenty feet out of the water, and its whole length was computed at not less than ninety or a hundred feet. Fins like immense oars were then striking the water on either side. It had a large stripe down the body, the remaining portion being of a dirty yellowish colour.

The colour of this sea-serpent and the dark stripe remind one of the one Captain Brocklehurst of the *Oceanic* saw five years before in the middle of the North Pacific and even of the *Nestor*'s extraordinary super-salamander. It is hard to believe that three wags should each have independently invented such unusual and yet such ordinary-looking features for their sea-serpents.

During the summer of 1886 sea-serpents were several times seen along the east coast of the United States, but, when not vague, they were not always described very soberly.[1]

One, which had a continuous dorsal fin and chased two boys in a rowing-boat right into the Hudson, had diabolical green eyes and 'squirted from its mouth a stream of foamy stuff resembling long shavings from a pine plank'. And the following year one was seen off Fort Popham, Maine, fighting with a 'big fish'. Next day, apparently, a big whale was found on the beach, dying and covered with wounds.

The next report came to light as a result of an inquiry into the sea-serpent made by the French daily newspaper *Ouest-Éclair* in 1922. Paul Cadiou, retired chief administrator of the Inscription Maritime, wrote:

> It was my fortune to see a sea-serpent in the Red Sea: I had embarked on the despatch-boat, *Le Parseval*, which was sailing to the Far East, as assistant paymaster. This happened at the end of December 1886. I was on the bridge with the officer of the watch when I saw, emerging from the sea, a gigantic serpent resembling a 'conger' with a flat head, and very dark in colour; the head and neck, curved as in a swan swimming, must have measured five feet. It disappeared at the end of ten seconds; it swam on the port side, at our speed, which must then have been nine knots; others in the crew saw it besides me.

This very matter-of-fact and apparently trustworthy report is all the more important since it comes from the Red Sea, an extension of the Indian Ocean, from which we only have very rare reports clearly referring to the long-necked sea-serpent, or even to commoner types.

The next report takes us back to the familiar type and to the familiar waters of Scotland. The witnesses are two naturalists, no less; but if their accounts agree that is more than one can say for their conclusions.

One of the witnesses, Professor Matthew Forster Heddle, a geologist and mineralogist, of St Andrews, wrote to Dr Oudemans in 1892, and the other principal witness, J. A. Harvie Brown, who had collaborated with the professor on a series of bird books, also sent an extract from his diary.

They were both cruising on Brown's yacht *Shiantelle* along the west coast of Scotland, and on the morning of 30 July 1887 she was almost becalmed off Shuna when the steward interrupted their breakfast.

'Would you come on deck, Mr Brown?'

Brown did so. There was an excited confabulation overhead and then:

'Heddle, come up, if you want to see the sea-serpent!'

The professor knew that Brown thought it absurd that anyone could believe in the fabulous monster. But he did not wait to be asked twice, and was astounded to see the animal some 500 yards away. Besides Brown and Heddle, the steward, R. L. Cowell, and deckhand, John Campbell, saw it too.

---

[1] Some witnesses were respectable: G. P. Putnam, principal of a Boston grammar school and a namesake of the well-known publisher, saw one off Gloucester, and B. A. Colona of the U.S. Coast Survey saw one at Cape Cod. Jonah—his prophetic name is all that we know of him—saw what he took at first for 'an immense tree floating with the tide . . . throwing twenty feet of its length out of the water'.

'There must be no talking to each other about this,' said Brown in the true scientific spirit. 'Each man is to write out a description of what he saw, and we will send the whole four to the three best authorities in Britain.'

When Heddle eventually read the descriptions he found that Brown's agreed perfectly with his own and that, except as regards size, their drawings fitted almost exactly. Brown made the humps slightly higher than Heddle did.

> I would just say [wrote Professor Heddle] that having taken bearings on the land, in order to estimate—(of course roughly)—the *length*, and the speed, I set down the length at from 60 to 65 feet. There was a very low flat head like a large skate, say 4½ feet—a gap not so great,—ten 'hummocks' increasing in bulk and altitude towards the central one, but not much—gaps not so great as the size of the hummocks, next a space, about equal to two hummocks, then three hummocks the central one largest, the last small.
>
> The thing I saw appear three times—first time end on was a worthless observation, except that on this occasion the whole was *rushing* through the water. On the other two occasions there was hardly any forward motion at all. The whole disappeared at the same moment, and reappeared also at the same moment, about two seconds thereafter more than its own length in advance; so that there must have been either an exceedingly rapid rush under water—*or* a second animal. The disappearance and reappearance were both without the *least* splash; but at the moment of disappearance the second time *the foremost two of the last three hummocks coalesced into one.*
>
> During one of the appearances I got the focus of the binoculars so sharp that I distinctly saw water falling over towards me, between some of the hummocks and myself. There was no consecutive filling up of the interspaces whatever, or appearance of vacuities where the hummocks had but now been.
>
> There was certainly no *vertical* serpentine motion—and I could see no *lateral* one.
>
> My impression was that, setting aside the quiescent low head, I *did not see a solid substance at all,*—except when the tail hummocks momentarily appeared—and that what I did see was water being thrown over laterally by the undulous lashings of a long back fin of a dark colour, which gave opacity.
>
> I cannot set the 'hummocks' down to *surge waves* of a rushing short fish; because I cannot so explain such surges being always the same both in *number* and in *place*: nor can I so explain the appearance of an apparently solid head—and an apparently continuous tail. The above is all from memory.

One could not wish for more exact observation or more cautious comment.

The other witnesses' completely independent descriptions confirm Heddle's in the smallest details, as the reader will see from the account written by Harvie Brown, who not only disbelieved in the sea-serpent before he saw it, but went on doing so afterwards.

> I counted with the binoculars twelve or perhaps thirteen humps at almost perfectly regular distances the one from the others. The first of these humps appeared to be moving rapidly through the water across the line of vision, and to be breaking and spraying water, and the other eleven or twelve (I had only time to count them once) maintained all their relative positions with one another and collectively with the first, *yet* did not appear in themselves to me to move, though slight ripples of water were visible, nearly throughout the whole length. The whole disappeared and reappeared at least four times to me, apparently simultaneously or almost so throughout its length. When last it was seen, it was moving on a course almost parallel with the shore, which shore runs N.E. or thereby. The distance from the ship at which time I first saw it, and from that time to its final disappearance was estimated by me at about half a mile by eye (but this may have been an over-estimate of distance).

After which one is amazed to read Brown's conclusion:

> I think it right to add to the above account as written down on the spot, that after the statements which were kept sealed for a long time after, were consulted and every consideration given to the whole tale and phenomenon personally I came to the conclusion, and feel very certain still, that it was simply a *Tide-rip* or *Tidal wave* coming from the direction of Corrievreachan between Scarba and Jura running Easterly and then N. Easterly along the smooth water where soundings showed the meeting of the shallow and of the deep.

Professor Heddle has answered this argument in advance. The waves of a tide-rip cannot keep their slightly irregular relative positions quite unaltered, especially after it 'disappeared and reappeared at least four times', to use Brown's words. He himself recognized that the first hump did not look quite like the others or behave in quite the same way.

It is said, and with good reason, that after the eye has seen something the mind embroiders it, often unconsciously, adding details that were not seen. Here the opposite has happened. Brown's mind has suppressed details which he saw and indeed checked—thus showing that incredulity is at least as strong as credulity.

Two women now enter the witness box, both of them officers' wives, great travellers and writers.

The first is Mrs Florence Caddy, who published in 1889 the story of her voyage to Siam and Malaya in the Duke of Sutherland's yacht *Sans Peur*. This is how she describes the sea-serpent which she saw 200 yards away on 22 January 1888 in the late afternoon as the yacht coasted through the calm blue waters off Travancore at the very south of India:

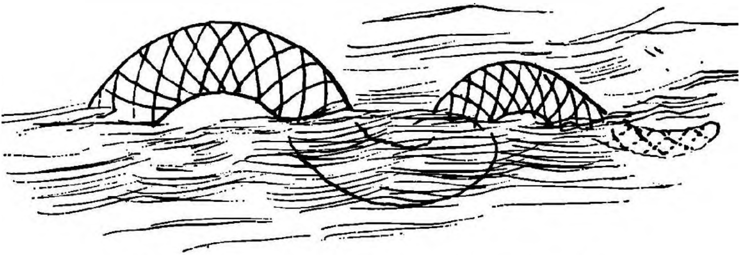
> a large luminous serpentine form, which rose slowly out of the water in two large curves (like two arches of a low bridge), letting me see distinctly the large diaper pattern marked on the flattened silvery sides of a huge snake.

In an appendix to her book Mrs Caddy repeats that the beast's most striking features were 'the flatness of its sides, its silvery luminousness, its bridge-like curves in gentle but decidedly vertical motion'.

It is hard to see how an animal with flattened sides could undulate vertically without turning on its side. At all events her description led the experts at the Natural History Museum in London to suppose it must be an oarfish. Even though Mrs Caddy said her serpent was as long as the yacht—and thus much larger than any known oarfish—her description is too striking to allow any other identification.

A fairly similar sight, but not so easily attributable to the gambols of an oarfish, is described in *Round the Black Man's Garden* by Mrs Zélie Colvile, F.R.G.S., the French wife of Colonel Henry Edward Colvile of the Grenadier Guards. At 6.30in the morning of 30 September 1888 she was on board the *Messir* off Suakin in the Red Sea:

> There was a great excitement, the crew rushing up to the side of the ship and eagerly pointing out something in the water. The Captain called us, and we hurried after him in time to see part of the body of some enormous sea-monster arching itself out of the water in a semi-circle, and only to be compared to a gigantic eel.
>
> The crew called it a *baten*;[1] (arabic word); but if it was not our friend the sea-serpent, it must have been some relative. The Captain told us he had seen it just before alongside the ship, some hundred feet long. The large portion we saw certainly let us believe there must have been a deal more under water.



66. The *Sans Peur* sea-serpent, 1888, after Mrs Florence Caddy

It was also in 1888 that the *Wisconsin* met a sea-serpent thirty miles from Sandy Hook, at the entrance to the Hudson, but we know nothing about it except that Brandt, the ship's doctor, and Leslie, the purser, said that it was greenish and at least 60 feet long.

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[1] According to whether the *t* is hard or soft this may mean either 'belly'—'insides' (i.e. possibly 'animal from the deep belly of the seas') or simply 'whale'.

Anonymous reports do not usually carry much weight, but that which a 'Captain' sent to *Answers* in November 1892 is worth looking at, for it is one of the rare references to two sea-serpents being seen together, and it occurs in the Mediterranean, which is also very infrequent.

> About three years ago [?1889] when going up the Mediterranean, and when half-way between Gibraltar and Algiers, and 20 miles from land, I saw, as I thought at first, two masts or wreckage of some ship standing out of the water, but presently seeing that they were moving, and evidently something alive, I naturally was very intent in watching them. They gradually drew nearer, until they got within half a mile or so of me.
>
> I saw then that they were large snakes or sea-serpents. They kept up on a parallel line with us for fully half an hour (ship going 8½ knots). They then struck off in another direction.
>
> I had a good view of them with the naked eye, but with the telescope I could see them as distinctly as if they had been on the ship's deck. One was a little longer than the other. I judged the longer to be not less than 30 feet, the other four or five feet shorter. The longer carried its head from four to five feet out of the water, the shorter one not so high by a foot. Their heads in shape were not unlike a greyhound's head without ears. Their bodies were about nine inches in thickness, of a dark brown colour on the back, but more of a gray underneath.

The 'Captain's' sea-serpents may not have been very big, but they were sea-serpents all the same, and long-necked ones at that.

It is harder to say exactly what the French transport and dispatch-vessel *La Meurthe* met on 1 September 1889 off Madagascar. The officer of the hydrographic service who was on board took it for a shark, but, according to the second-in-command, de Cotigny and several other officers, it had a shark's head but a more elongated body.

And what of the sea-serpent that Captain David Tuits of the schooner *Anny Harper* saw in the early summer of 1890 near Long Island off Connecticut? He said it was 100 feet long and that 40 feet of its tail, which was brown with black spots, was out of the water. It is most unlikely that an animal would swim with its chief organ of propulsion out of the water. Did he mistake the head and neck for the tail?

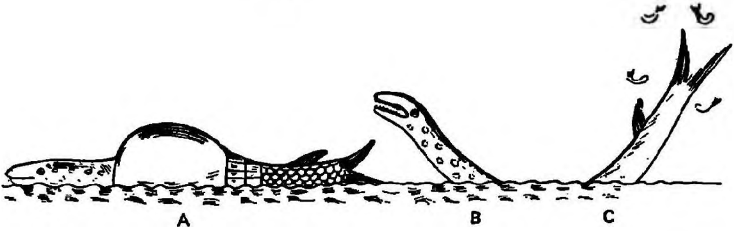
The British Period ended in the South Pacific, and almost in farce.

So far we have entered the South Pacific only in 1870 with John Adams's red sea-serpent which was a bit too much of a snake for our taste. Charles Gould also tells, though not very explicitly, of three earlier sea-serpents in this area. The first was 30 feet long and seen in February 1878 off Nerowas Island by everyone on board the steamer *Durham*; the second raised a maned head and neck before the eyes of Villeneuve, commander of the French warship *Le Seudre*, and his officers in the same year as they cruised near the barrier reef of New Caledonia; and the third, which was very similar, passed only a few yards from Major James Harding's boat in Suva Bay on Viti Levu in Fiji in 1881 when he was fighting for King Cakobau against the rebel tribes of Vanua Levu.

Finally the *Daily Express* of 14 September 1903 tells us that in 1890 a Mr Mustard, a pilot in Singapore, saw a 45-foot sea-serpent off Borneo.

All this is pretty vague, but at least it implies that a maned sea-serpent is also found in the South Pacific. It is sometimes more embarrassing to receive a detailed report which seems to offer guarantees of its veracity. The most disconcerting of all is certainly the one about the *moha-moha* of the Great Barrier Reef of Queensland.

It all began with a letter in which Miss S. Lovell, a schoolteacher at Sandy Cape on Great Sandy Island, Queensland, told of a strange thing she had seen. The letter was addressed to a 'constant reader' of *Land and Water* who sent an extract to that magazine, cryptically signing himself '*Tempus omnia monstrat*'.



67. Three views of the *moha-moha*, 1890, according to Miss S. Lovell

The extract was published 3 January 1891:

> ... We have had a visit from a monster turtle fish. I send a sketch of it.[1] It let me stand for half an hour within five feet of it. When tired of my looking at it, it put its large neck and head into the water and swept round seaward, raising its dome-shaped body about five feet out of water, and put its twelve feet of fish-like tail over the dry shore, elevating it at an angle. Then, giving its tail a half twist, it shot off like a flash of lightning, and I saw its tail in the air about a quarter of a mile off where the steamers anchor.
>
> It has either teeth or serrated jaw-bones. Native blacks call it 'Moka, moka,'[2] and say they like to eat it, and that it has legs and fingers. I did not see its legs, as they were in the water. What I saw of it was about 27 ft. or 28 ft., but I think it must be 30 ft. in all. Whilst its head was out of water it kept its mouth open, and, as I could not see any nostrils, I fancy it breathes through its mouth. The jaws are

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[1] The sketch printed here as Fig. 67 is an improved version which Miss Lovell sent later.

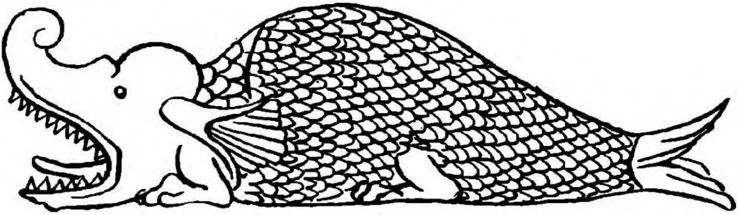
[2] This should be '*Moha-moha*', but was misread by '*Tempus*, etc.' or by the printer.

> about 18 in. in length; the head and neck greenish white, with large white spots on the neck, and a band of white round a very black eye and round upper and lower jaws.
>
> The body was dome-shaped, about 8 ft. across and 5 ft. high, smooth, and slate-grey in colour. Tail about 12 ft., the fish part wedge-shaped, and fin of chocolate-brown. Then beautiful silver shading to white scales size of thumb nail.

What on earth could this incredible animal be? It looks like a *makara*, a composite monster of Indian myth that usually has a fish-tail—or perhaps an 'exquisite corpse', the result of a surrealist game of 'heads, bodies and legs'. One player has drawn a snake's head and neck, the next a turtle's body, and the third a fish's tail.

Yet the editor of *Land and Water* was confident that he knew what it was:

> In the opinion of the authorities (at the Natural History Museum) this turtle is the *Carettochelys*, a monster turtle known to exist at the mouth of the Fly River, New Guinea, which has a very long neck. The museum at Sydney possesses the only known specimen.



68. The *makara*, sea-monster of Indian legend

The Fly River Turtle, which has no scales, is the strangest turtle in the world, but many specimens have now been collected, and even in 1891 it was known to be no monster—at least in size— for it rarely exceeds 30 inches in length. The experts at the Natural History Museum must have looked at the sketch without reading the description. But how did they explain the fish-tail? The editor of *Land and Water* merely says:

> The length and shape of the tail, as described, are, however, impossible, as no turtles have caudal appendages corresponding to the description, and the fair observer must have been mistaken on this very important point.

To which Miss Lovell replied sharply:

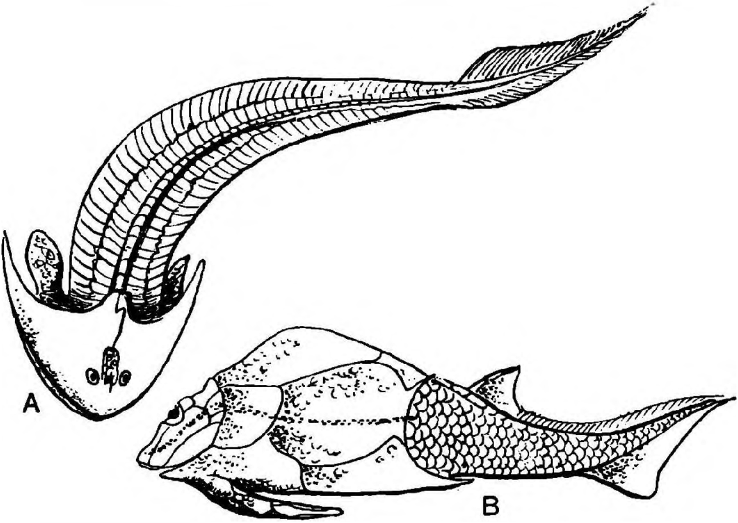
> You speak of the impossible length of its tail. I beg to state this is a most astounding statement from people who have never seen this monster, half fish, half tortoise. The tail was over the dry shore for half an hour, so close to me, that five footsteps would have enabled me to put my hand upon it.

The editor did not budge from his position. But the schoolmistress's acerbity seems to have shaken his syntax:

> With no wish to cast any doubt on our fair correspondent's veracity and powers of observation, we must adhere to the editorial remarks made in our issue of January 3, and point out to her that from a scientific point of view, the existence of a creature combining the characteristics of a fish, together with those of a tortoise, are absolutely impossible.

Upon which R. T. Gould was later sarcastically to remark:

> His knowledge of palæontology, apparently, was slight. The extinct *Pterichthys* and *Drepanaspis* seem to have existed for the express purpose of refuting his assertion.



69. Armoured fishes of the Devonian Period: A. *Cephalaspis*; B, *Pterichthyodes*

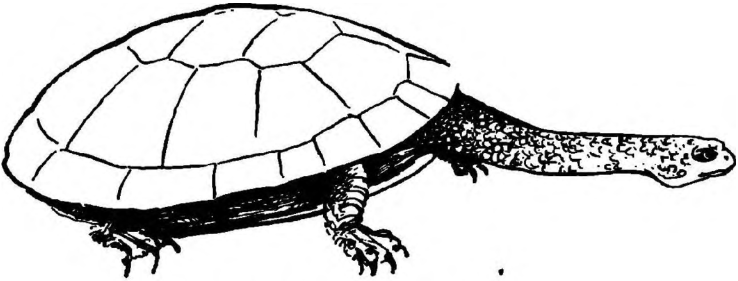
It is true that some armoured fish of the Devonian Period, in the middle of the Archaeozoic Era—especially the placoderms of the order of Antiarchi—have such a strange anatomy that one might think they were varieties of crustaceans or turtles. *Pterichthyodes* is disturbingly like the *moha-moha*—but only in the body and the tail. No fish has ever had a true neck, that is to say a thinner link between the head and the body. What may look like a neck in an eel is actually its body. These armoured fish do not really solve the problem of the Sandy Cape monster. And Miss Lovell only darkened the mystery in a new letter giving details about its local reputation.

> The blacks, who had not seen it on the day I did, named it at once from my sketch, which must, therefore, be pretty accurate, and called it 'Moha, Moha,' and laughed and said 'Saucy Fellow, Meebee,' in English, 'dangerous turtle.'
>
> It is eight years since it attacked the black's camp. It can stand upright, and it put its legs on the shoulders of a powerful black, 6 ft. high, and knocked him down. That year it invaded their camp, and nearly caught one man by the leg. For months after the blacks camped inland.

To which rather unhelpful information she adds, 'It is not a turtle, but a monster, half fish, half tortoise, with the carapace perfectly round in front.'

The poor editor's spelling now begins to suffer as well as his syntax:

> A large and very fierce variety of turtle (*Triolix*) are well known to inhabit Queensland, and several instances have been known of their attacking men.



70. *Chelodina longicollis* of Australia

Perhaps *Triolix*, a non-existent name, is a slip for *Trionyx*—though this genus of soft-shelled turtle is not known in Australia. Nor are any turtles known to attack man unprovoked, though some may bite viciously if one tries to catch them. But it is true that there is a tortoise (*Chelodina longicollis*) in Australia with a neck like a snake, as long in proportion as the *moha-moha*'s. Admittedly it is minute, but at least it shows that it is anatomically possible for a tortoise to have a very long neck.

Thus in the 'exquisite corpse' that forms the *moha-moha*, the body and tail could belong together as in the placoderm fish *Pterichthyodes*, and the head, neck and body could do so as in *Chelodina*. But *all* cannot possibly go together, at least so far as we know. For this reason the editor tactfully suggested:

> Our correspondent must not suppose that we doubt her having seen some abnormal monster, but we cannot believe that it is 'half fish half tortoise' as she describes, and the only solution we can offer is that the monster tortoise had clasped by its nether limbs, and had pressed against its abdomen some very large

> fish, the upper part of whose body was thus concealed, while the tail projected behind, and gave the tortoise the appearance of having a fish's tail.

This explanation is obviously very far-fetched, but it is not the only one possible. An equally, if not more, far-fetched possibility, anatomically at least, is that it is a gigantic placoderm fish, somehow surviving from the Devonian, in process of swallowing a huge conger tail first.

Miss Lovell does not seem to have accepted his explanation, at all events she did not reply. But the story did not end there. William Saville Kent, assistant curator of the London Natural History Museum, who was writing *The Great Barrier Reef of Australia*, asked Miss Lovell for as detailed an account as possible, so that he could christen the *moha-moha* with a scientific name.

In view of its size and generally amiable habits this seemed the most likely of all sea-serpents to settle down happily in a zoo. Though he begins with facetious remarks about 'a new and alderman-enthralling brand of turtle soup', he goes on to write very seriously:

> With reference to its obviously-combined chelonian and saurian peculiarities, coupled with a fitting acknowledgement of its discoverer, it is here distinguished as the Great Barrier sea-serpent, *Chelosauria lovelli.*

All the same he is worried by its unduly fishy tail and adds:

> The only explanation that can be suggested with relation to it is that it is actually a bifurcated fleshy tail, or possibly an originally spatulate or paddle-like one, at which a shark, or perhaps a cross-grained, back-biting relation, had taken an unfriendly nibble.

But this 'only explanation' (yet another one!) will not hold water, as Miss Lovell goes on to describe the tail in great detail. Here is her new account, which I quote entire, for I think it enables us to settle this mysterious affair.

> I was (while walking on the Sandy Island beach) admiring the stillness of the sea, it being a dead calm, when my eye caught sight of the head and neck of a creature I had never seen before.
>
> I went to the edge of the water and saw a huge animal, lying at full length, which was not at all disturbed by my close proximity to it, enabling me to observe the glossy skin of the head and neck, smooth and shiny as satin. Its great mouth was wide open all the time it was out of the water.
>
> In about a quarter of an hour or so it put its head and neck slowly into the sea, closing its jaws as it did so. I then saw what a long neck it had, as it moved round in a half circle, and also perceived that the head and neck were moving under a carapace. When the head was pointing out to sea it rose up, putting a long wedge-shaped fish-like tail out of the water over the dry shore, parallel to myself, and not more than five feet from me, not touching the sand, but elevated. I could have stood under the 'flukes of its tail.'
>
> The only part of the body that had marks like joints (like in size and shape to a

> common brick) was also on the dry shore, but *resting* on the sand; the great dome-shaped carapace, dull slate-grey, was standing quite five feet high, and so hid its long neck and head from my view, which before it rose I could see as a long shadow on the water. The carapace was smooth and without marks of any sort. The fish-like part of the tail was as glossy and shiny as the head and neck, but of a beautiful silver-grey, shading to white, with either markings or large scales, each bordered with a ridge of white, but if scales, not like those of a fish in position, as the fishes' scales lie horizontally, while the Moha's, if scales, lie perpendicularly, each the size of a man's thumbnail. It had a thick fleshy fin near the end, about three feet from the flukes, and, like them, chocolate-brown. The flukes were semi-transparent; I could see the sun shining through them, showing all the bones very forked. One of the girls asked me if a shark had bitten a piece out of its tail, and the other wanted to know if I thought it was an alligator! The fish-like part was quite twelve feet long.
>
> All the time the animal was on shore it was perfectly motionless; at last it gave a curious half-twist to the fluke part of its tail, the movement only just reaching beyond the fleshy fin, and, without disturbing the water in the slightest degree, vanished. I seemed only to have taken one breath when I saw its tail out of the water about the place where the steamer anchors, sending a quantity of fish into the air. I then saw it give a twist of its tail, and it disappeared altogether. The black boy saw it on shore the previous Monday, the 9th inst.
>
> As I was so close to it for at least half an hour, I was able to study its shape and colouring. In moving about, head and tail were seen alternately above water, but not even the shadow of its great body, and, from the length of that, a spectator could not guess that the head and tail belonged to the same creature, particularly as the colouring is so different. The parts I did not see were the legs. I stooped down and tried, but in vain, to see them, though the Moha was standing in only a foot of water, but the Black described them as being like an alligator.

Besides this personal report Miss Lovell sent Kent a confirmatory, but not, alas, very explicit, document as follows:

> We, the undersigned, saw the Moha-Moha (as described by Miss Lovell) making for the shore of Sandy Cape on June 8th, 1890:
>
> James Alsbury, 1st. assistant, Sandy Cape Lighthouse.
> William H. Lees, 3rd. assistant, Sandy Cape Lighthouse.
> Mrs. Lees.
> Donald Henderson.
> Jemima Alsbury }
> Jessie Alsbury } daughters of James Alsbury.

Robert, the black boy, set his mark against it, having seen it on Monday the 9th and having, like the two girls, been on the beach with Miss Lovell when she examined it.

Such are the documents concerning the *moha-moha.*

To me the most astonishing thing about this affair is not the monster's bizarre anatomy, but the innocence and ineptitude of the commentators, not only the editor of *Land and Water*, but also William Saville Kent and R. T. Gould, who gives the *moha-moha* a chapter to itself in his excellent book on the sea-serpent.

While with all the other sea-monsters the experts are always sceptical—often far too sceptical—here they accept everything and even pay gallant compliments to Miss Lovell's good faith, sincerity and excellent powers of observation. But to my mind, with all due respect to her sex, she can only be an arrant liar, and a bad liar at that, since the different versions of her tale are a tissue of contradictions and absurdities. It is evidence not of zoological fact but of psychotic behaviour—a characteristic case of mythomania.

I have already said that the *moha-moha*'s anatomy seems strictly impossible from our present knowledge of zoology: I believe it is impossible in the absolute. Although we may discover such apparently impossible animals as the platypus (an egg-laying mammal) or the chalicotherium (an ungulate with claws) there is an internal contradiction in the *moha-moha*. Miss Lovell says she examined the tail 'not more than five feet from me', but she could not tell whether it was marked or had scales as big as a thumb-nail. She must have been very short-sighted. But she says that if there were scales they were perpendicular to the axis of the body. Now, not only is this arrangement unknown in any animal, but it *could not* exist in any part of an animal that had to bend. If scales are not to hinder movement they must be in transverse rows and slip easily over one another. Who ever dreamed of making a flexible metal tube out of longitudinal strips?

Perhaps after all Miss Lovell saw marks and not scales (though she describes them minutely enough). But the whole thing smells far too fishy. If you try to reconstruct what she describes mentally—or better still graphically—you will not succeed. When her description of the tail was doubted she replied that 'the tail was over the dry shore for half an hour' during which she was able to examine it. But the whole adventure did not last much more than half an hour according to her first version, and according to the second it was after a quarter of an hour that it 'rose up, putting a long wedge-shaped fish-like tail out of the water over the dry shore ... not touching the sand, but elevated'. I cannot believe that the *moha-moha* remained a half or even a quarter of an hour with its tail hoisted up in the air at an angle.

She also says that it was 'in only a foot of water' and that it raised 'its huge dome-shaped body about five feet out of the water'. But how did it hide such a dome when it was *in* the water? Finally, she says, 'All the time the animal was on shore it was perfectly motionless.' After which it vanished into the water and she saw nothing but its tail near the steamer anchorage before it disappeared altogether. Yet she says, 'In moving about, head and tail were seen alternately above water.' But when could she have seen this happen?

Moreover her various accounts are fogged with deliberate ambiguity and confusion, so that if her lies are doubted she can pretend she has been misunderstood. One pities her poor pupils, for her own style is often so confused as to be incomprehensible. For instance it is hard to tell from her account whether the *moha-moha* attacked the camp once or twice or whether it is the same man that was knocked down and nearly caught by the leg. Re-read the phrase, 'the great dome-shaped carapace ... hid its long neck and head from my view, which before it rose I could see as a long shadow on the water.' From the context it is the carapace that appeared as a shadow, but grammatically it is certainly not. In the girls' questions the phrase 'if I thought it was an alligator' is equally ambiguous. And in any case where were these girls who suddenly appeared from nowhere, and where was the black boy? Here it is said the boy saw it 'the previous Monday, the 9th inst'. But how do we reconcile this with the solemn statement signed by the witnesses that they all saw it on the 8th? It is all suspect from beginning to end.

The black boy could not have written an account of what he saw. But the other witnesses could have done better than just speaking of 'the Moha-Moha (as described by Miss Lovell)'. They may well have seen some strange animal, but did it really have the contradictory anatomy Miss Lovell described?

I find it hard to believe that Miss Lovell was not a dotty old maid who had picked up, but not digested, a smattering of palaeontology and Brahmin legend.

Exit *Chelosauria lovelli*.

•

With this incongruous monster out of the way, we can end the British Period in the South Pacific in a much more respectable way.

Alfred Ford Mathews, a surveyor from Gisborne, on North Island, New Zealand, was returning from Auckland on the steamer *Manapouri* on 14 July 1891 when he saw a sea-serpent off East Cape:

> The 'monster' was also seen by the ship's officer in charge. It would from time to time lift its head and part of its body to a great height perpendicularly, and when in that position would turn its body round in a most peculiar manner, displaying a black back, white belly, and two armlet appendages of great length, which appeared to dangle about like a broken limb on a human being. It would then suddenly drop back into the water, scattering it in all directions. It had a flat head, and was about half a mile distant from the ship.

Mr Mathews had not mentioned it earlier for fear of being laughed at, but was induced to do so because a week later what was probably the same animal was seen not far away off Portland Light by the chief officer and the quartermaster of another steamer, the *Rotomahana*, who at once gave the press a detailed report. The chief officer, Alexander Lindsay Kerr, said:

> On Saturday morning last, August 1st., about 6.30 o'clock, we were off Portland Light, between Gisborne and Napier. I was on deck looking over the weather side, to see if I could see the land, when I saw the object, whatever it was, rise out of the water to the height of about 30 ft. Its shape was for all the world like a huge conger eel, with the exception that it had two large fins that appeared to be about 10 feet long. The creature was not more than 100 yards away at the outside, and I should estimate its girth at between ten and twelve feet. I could not see its back as it was coming straight towards the steamer, but its belly and fins were pure white. The creature's head did not appear to be particularly definite, the neck running right up to the head the same as that of a large eel. It was broad daylight at the time, and the sun was shining clearly. When it went beneath the water it did not fall forward like a fish that is jumping, but drew itself back as if with a contortion. I only saw it the once which was the last time it rose ... As to its length I could give no opinion, but as the creature rose some 30 ft. out of the water I should imagine there were still two-thirds of it in the water, but that is only my supposition.

The testimony of Peter Nelson, the quartermaster, repeats Kerr's exactly, but with the following additional details:

> The fins seemed to be about 10 ft. long, and were situated about 20 ft. from the head. The tips of the fins were about touching the water. Where the fins joined the body the latter seemed to bulge out. I did not see the fins the first time it rose, but I saw them each time afterwards. The belly and the fins were pure white. I saw the back part. It was the colour of an eel.

To these reports, which are unusual in describing a long-necked sea-serpent showing its fore-limbs, I need only add that the creature could not be related to the eels, since these fish have their pectoral fins immediately behind the head. There is no true neck as here.

And what have the experts been doing while the witnesses have been seeing this multiplicity of varied sea-serpents and, despite Sir Richard Owen's veto, giving them many special names? There were now so many trustworthy reports that the sceptics could no longer shrug their shoulders. In 1877 Richard Proctor had written, 'naturalists have been far less disposed to be incredulous than the general public'.

Thus when Arthur Adams mistook a floating tree-trunk for a huge serpent, he claimed that this was a possible source of error, but took care not to generalize. And when Captain J. H. Taylor made a similar mistake and opened fire on a gigantic mass of seaweed, the newspapers enjoyed reporting this modern Don Quixote, and the Dutch zoologist, Pieter Harting, put a note about it in *Album der Natuur*.

There were few people now who explained *all* sea-serpents as misinterpreted commonplace phenomena. But of those who did, it was a writer in this period who took the biscuit. Dr Joseph Drew wrote the following letter, which appeared in *Nature* on 5 September 1878:

> On Monday, August 5, a number of geologists crossed in the Folkestone boat to Boulogne ... and, when about three or four miles from the French coast, one of these gentlemen suddenly exclaimed, 'Look at that extraordinary object passing across the bow of the steamer about a mile or a mile and a-half in advance of us!' On turning in this direction there was seen an immense serpent apparently about a furlong in length, rushing furiously along at the rate of fifteen or twenty miles an hour; it was blackish in front and paler behind; its elongated body was fairly on the surface of the water and it progressed with an undulating or quivering motion ... the object before them could be nothing less than the great sea-serpent himself; for—
>
> Prone on the flood, extended long and large [etc.] ...
>
> The writer fortunately had with him one of Baker's best opera-glasses, and, after a few moment's use of this little instrument, the wonder was satisfactorily resolved. The first half of the monster was dark and glittering and the remainder of fainter hue, gradually, fading towards the tail. The glass did not determine the matter until the extreme end was reached, and then it was seen to consist of a mass of birds in rapid motion ... Doubtless these birds were shags (*Pelecanus cristatus*) returning to their homes for the night from the distant waters in which they had been fishing, during the day ... the writer has thought it his duty to report the circumstance to you that your readers who voyage across the seas may keep their opera-glasses in their pockets and verify for themselves, on the first opportunity this interpretation of the great sea-serpent.

Unfortunately for Dr Drew it needs more than a pair of opera-glasses (even Baker's best) and a working knowledge of Milton to solve the problem of the sea-serpent. Had he taken the trouble to consult the reports in log-books and other accounts of voyages, he would have found that seamen had used better means to examine unknown sea-animals, and that his theory would not hold water for any of the detailed observations I have quoted so far. For it is hard to see how a flock of birds could look like a periscope or a string of buoys, could swim partly submerged and disappear beneath the waves at times, could reveal a pair of eyes, a mouth, of a pair of fins, or indeed look like anything but a flock of birds at less than a hundred yards (see Plate 33).

I need hardly say that any explanation, however absurd, that reduces an unexplained phenomenon into something quite commonplace is seized upon by the press and lapped up by the public.

Dr Drew's letter was quickly followed by others of the same kidney. A letter from a Mr Bird (who no doubt had a personal interest in the theory) appeared in *Nature* on 15 September. Between Grimsby and Rotterdam he had seen

> a low, black hull, without masts or funnel, moving through the water at enormous speed. After a minute or two it undulated and rose from the surface, and we saw that it was a flight of birds.
>
> The deception was so complete that I can well believe that at least many of the stories of the sea-serpent have so originated, though I doubt whether *all* can be explained in this manner.

A week later C. M. Ingleby told how he had mistaken a flight of petrels for 'the Great Unknown'. On 8 February of the following year W. Steadman Aldis wrote of a similar mistake, and a week later J. Rae joined him in the confessional.

But this is a very long way from saying that seamen are equally short-sighted. On the contrary they are used to looking at things floating on the sea a long way away and even to judging their size pretty accurately. We can understand Captain Austin Cooper's angry retort after he and his officers and crew had seen a 'varmint' from the *Carlisle Castle* on a voyage to Melbourne. A description and a drawing appeared in the Melbourne *Argus*, which was picked up by one of the 'young lions' of the *Daily Telegraph*—for it was the 'silly season'—who made mincemeat of it and of the captain.

> I don't see any more sea-serpents [he wrote to a friend]. It is too much to be told that one of Green's commanders can't tell the difference between a piece of seaweed and a live body in the water. If twenty serpents come on the starboard, all hands shall be ordered to look to port. No London penny-a-liner shall say again that Austin Cooper is a liar and a fool.

At the end of the British Period, there were, however, other explanations of the sea-serpent that were more worthy of attention than the 'flock of birds' and 'seaweed', especially those put forward in two first-rate works of popular science.

In 1879 Dr Andrew Wilson published his *Leisure Time Studies* in which he devoted a chapter to 'The Sea-Serpents of Science'. Like all other authors who had not merely picked out one or two reports but studied the problem as a whole, Dr Wilson was convinced that there were huge and still unknown animals in the sea. One could not, he felt, despise the testimony of hundreds of intelligent and trustworthy people, nor could one say that they were all victims of illusions. They must have seen 'something'. Dr Wilson set out to show that this 'something' was in most cases undoubtedly a living creature, an animal and a vertebrate. A bird being out of the question, there remained three groups to consider: fish, reptiles (presumably including amphibians) and mammals. In each of these three classes, especially in the first two, there were some species corresponding in many respects to descriptions given of strange sea-monsters. But two things must be taken into consideration. Firstly the desire to explain the sea-serpent as a known species of animal of serpentine shape and even nature had put scientists in blinkers and had frustrated their researches. Secondly, zoologists had not taken into account the possibility of abnormal and gigantic development of ordinary sea-animals. These two points are, according to Dr Wilson, the key to the problem, for we may

> build up a most reasonable case both for their existence and for the explanation of their true nature, by taking into account the facts, *that the term 'sea-serpent', as ordinarily employed, must be extended to include other forms of vertebrate animals which possess elongated bodies; and that cases of abnormally large development of ordinary serpents and of serpent-like animals will reasonably account for the occurrence of the animals collectively named sea-serpents.*

All of which is sensible enough. But then he goes on to say that in his view most sea-serpents are merely huge specimens of ordinary sea-snakes. One wonders why Dr Wilson distinguished so carefully between 'ordinary serpents' and 'serpent-like animals'. But these latter will come into his argument later.

> There is no single fact, so far as I am aware, [Dr Wilson goes on] which militates in the slightest degree against the supposition that giant members of the sea-serpents may be occasionally developed. The laws which regulate human growth and structure, and in virtue of which veritable 'sons of Anak,' like Chang the Chinese giant, and the Russian giant, differing widely in proportions from their fellow-mortals, are developed, must be admitted to hold good for the entire animal kingdom.

True enough. But if these same laws hold good in the animal kingdom how big will giant sea-snakes be? Dr Maurice Burton, formerly of the British Museum (Natural History), has shown that if we consider the animal species for which we have trustworthy measurements 'we find that the outsizes of species are: 68 per cent above average size, and 40 per cent above the unusually large'.

The longest measured specimens of sea-snakes are no more than 10 feet long, so giants of these species might reach 14 feet. Even if we suppose there is a species of sea-snake of which the average length is 10 feet, the most gigantic freaks will not exceed 17 feet. This is much smaller than the smallest sea-serpents ever reported.

But Dr Wilson does not stop there:

> But clearer still does our case become when we consider that we have proof of the most absolute and direct kind of the giant development of such forms as cuttle-fishes ... At the present time we are in full possession of the details of several undoubted cases of the occurrence of cuttle-fishes of literally gigantic proportions,—developed, in fact, to an extent justly comparable to that of the supposed 'sea-serpent', when the latter is compared with its ordinary representatives of the tropical oceans.

Dr Wilson supposed, as Harting, Crosse and Fischer had done around 1860, that the giant squid belonged to the same species as the little one, on the grounds that cephalopods 'probably grow as long as they continue to live'. But in 1879 Dr Steenstrup and Professor Verrill had shown that the giants belong to quite a different genus, *Architeuthis*, which forms a special family. And it is generally believed that the laws governing the growth of individuals in a species are more or less the same throughout 'the entire animal kingdom' as Dr Wilson himself believed.

His first explanation is therefore untenable. We need not even counter it with the fact that there are very few cases of sea-serpents being seen swimming with horizontal undulations like a snake, and that even the theory that sea-serpents belong to a different giant species of snake does not agree with most observations.

Dr Wilson did not, of course, intend to explain *all* sea-serpents as giant sea-snakes. Indeed this is why he wanted the term 'sea-serpent' 'to include other forms of vertebrate animals which possess elongated bodies'. But it is a disappointment to find that these other forms are merely oarfish, which he uses to explain the jagged crest of the *Osborne* monster. And it is only by mental gymnastics that he can reconcile that ribbon-like fish with the description of the monster:

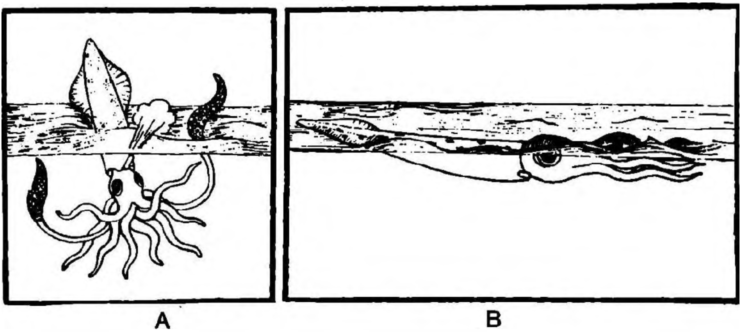
> The imperfect view obtained of the body renders the expression contained in the report, that the body was 'like that of a gigantic turtle', somewhat problematical as to its correctness.

I have already mentioned the influence of zoological fashion on theories about the sea-serpent's identity. As the giant squid was so much in the news at this time, being constantly cast up on the shores of Newfoundland between 1871 and 1879 to the amazement of the public and the zoologists alike, it was only to be expected that someone would argue that it was the true prototype of the sea-serpent. The reader may feel that an *Architeuthis* and a sea-serpent have little in common, but this is to underestimate the ingenuity of those determined to explain the unknown of today by what was yesterday unknown.

It was Henry Lee, Curator of the Brighton Aquarium, who had taken over the editorship of *Land and Water* when Buckland died in 1880, who undertook the task in a book boldly entitled *Sea Monsters Unmasked*. It dealt, as the present work does, with those two monsters, the *kraken* and the sea-serpent. It explained the first by the actual existence of giant squid—and the second likewise.

Lee had changed in the three years since he made his very pertinent comments about the *Osborne* affair. He was not the first to argue that the sea-serpent might be an *Architeuthis*. Denys de Montfort had done so at the beginning of the century, though with great reservations, and Dr Andrew Wilson had done so in the particular case of the *Nestor*'s striped salamander. But Henry Lee maintained that *all* sea-serpents, with very rare exceptions, were really giant squids.

Of course the old tales of sailors seized on deck by famished sea-serpents probably do refer to *Architeuthis*. In the Age of Terror the two monsters were confused, and Olaus Magnus's famous wood-engraving illustrates this marriage between the *kraken* and the *Sæ-Orm*.



71. How Henry Lee used the giant squid to explain: A. Egede's monster and B. the *Daedalus* sea-serpent

But this does not mean that the sea-serpents in most of the reports I have quoted are really giant squids. Lee includes those described by Hans Egede, Donald Maclean, Lieutenant Sandford of the *Lady Combermere*, Surgeon-General R. Davidson, Morries Stirling, J. C. Lund, the crew of the *Daedalus* and Captain Harrington of the *Castilian*. Each time he thinks it is an *Architeuthis* swimming *à fleur d'eau*: its lanceolate tail raised above the waves forms the pointed head, its cylindrical body the neck, its eight arms form a mane, and the jets of water emitted by its locomotor siphon simulate a long tail. The rhythmic expulsion of this water explains the waves which produce the 'string of buoys' effect (Fig. 71B). He mentions the squid's 'very large and prominent eyes' without explaining how they could have been seen on the creature's supposed head when they are behind its supposed neck.

His explanation of how Egede saw a giant squid leaping out of the water is quite farcical. The breath which spouted from Egede's monster's nostrils is made to come from the siphon which is under water, and one of the tentacles is lifted out of the water to look like a tail. He does not explain how the

Architeuthis is lifting itself out of the water when the locomotor siphon would seem to be driving it down.

Lee says nothing of the 'periscope position' in which the long-necked sea-serpent is sometimes seen. But knowing his methods we can interpret it for him. It occurs when an *Architeuthis* swims on the surface lifting one of its tentacles out of the water. It may make this odd gesture for one of the following reasons: (1) to see which way the wind is blowing; (2) to wave to one of its fellows; (3) to see if it is raining; (4) to give a traffic signal when about to turn; (5) to make innocent sailors think that it is a different kind of serpentine sea-monster, and incidentally a much less terrifying one.

But, to cap everything, when we come to one of those rare sea-serpents that *might* possibly be a giant squid, to wit the one seen by the crew of the *Pauline* at grips with a whale, Lee suddenly finds his explanation unsatisfactory, and one is amazed to find him saying, 'They may have seen a veritable sea-serpent.'

If there are *veritable* sea-serpents, then Lee has failed to unmask them—but I suppose the title of his book was too attractive to be dropped.

Wilson's and Lee's books show how much the climate of opinion has changed during the British Period. The sea-serpent has become something which can be seriously discussed by scientists and even finds its way into the ninth edition of the *Encyclopaedia Britannica* (1886). The author, W. E. Hoyle, consulted no less than eighty-nine publications on the subject and wrote a 'Contribution to a Bibliography of the Sea Serpent'. The 'Yankee humbug' had become very respectable.

Hoyle was generally sceptical, and lists the various explanations that we know so well, but in the end has to leave the question open:

> It would thus appear that, while, with very few exceptions, all the so-called 'sea-serpents' can be explained by reference to some well-known animal or other natural object, there is still a residuum sufficient to prevent modern zoologists from denying the possibility that some such creature may after all exist.

In scientific circles the days of diehard incredulity ended on 18 December 1892 when Sir Richard Owen died. Several weeks earlier Dr Oudemans's great work, *The Great Sea-Serpent*, had been published, and in it the animal which the British zoologist had maintained was a ghost was scientifically described with all the details of its anatomy, physiology, psychology and ethology. One cannot help wondering if there is a connection between the two events.

10

Dr Oudemans's Enormous Mammal

(Dutch Interlude, 1892)

Even the sea monsters draw out the breast, they give suck to their young ones.
The Lamentations of Jeremiah

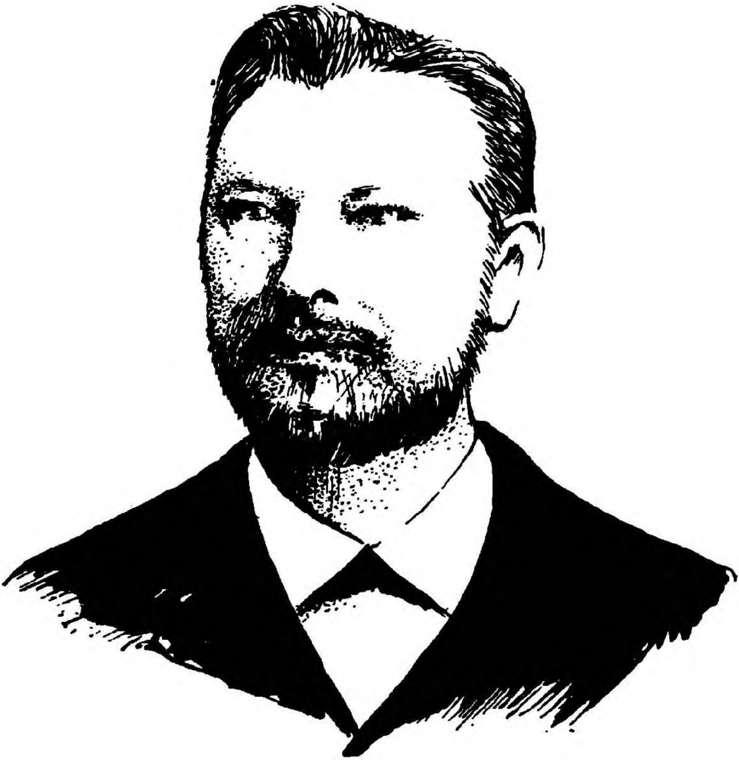
PARADOXICALLY it was a specialist in the smallest of land invertebrates who wrote the first monograph on the largest of marine vertebrates. It was a Dutch acarologist, knowledgeable above all in the anatomy and habits of ticks, itch-mites and cheese-mites, who wrote that masterly and monumental quarto of 592 pages, *The Great Sea-Serpent.*

There is a closer link between the study of the Great Serpentiforms and the tiny Acarids than might first appear. In order to study this vast group of tiny arachnids scattered over the globe and hidden in the most unlikely places—in the soil, in the tissue of plants, on the skin of animals and even in their respiratory cavities, in the living as well as the dead, and in fresh water as well as in salt, wherever there is something to gnaw or to suck—to track down, describe and classify these elusive little animals needs the same patient exactitude, methodical memory and obstinate courage as it does to tackle the sea-serpent's dossier, that rag-bag of everything strange that man has seen in the sea since he first came to its shores.

Antoon Cornelis Oudemans had all these qualities. He was born in Batavia on 12 November 1858. His father, Professor J. A. Chr. Oudemans, was Chief Engineer to the Hydrographic Service in the Dutch East Indies and a noted astronomer. The family had been a dynasty of scientists and scholars. Antoon's grandfather and namesake was a distinguished philologist; his uncles were Professor A. C. Oudemans (the same initials again), a talented chemist, and Professor Cornelis Antoon Jan Abraham Oudemans, the famous botanist and expert on fungi, whose son Dr J. Th. Oudemans was to become president of the Entomological Society of the Netherlands. As there were so many Antoon Cornelises and Cornelis Antoons it is not surprising that our Antoon added 'Jongzoon' (or Junior) after his name.

The conclusions which Dr A. C. Oudemans, Jr, was eventually to draw about the sea-serpent were most original. For him it was a sort of giraffe-necked seal with a very long tail. He came, as we shall see, to this conclusion by a roundabout route.

He was sent home to the mother country very young and entered the Hoge Burger School at Arnhem in 1871. He had long been interested in natural



72. Oudemans as a young man

history—zoologists are born and not made—and besides collecting insects he read very widely, and it may even have been as early as this that he began to collect articles about the sea-serpent.

He began his biological studies at the University of Utrecht in 1878. A year later, at the age of twenty-one he read a note to the Entomological Society about an albino variety of butterfly he had caught. It was a modest beginning, but at the end of the same year it was followed by a learned study of the Acarids. This puzzling group of arachnids fascinated him, and he planned to write his doctoral thesis upon them, but his very young professor Dr Ambrosius Arnold Willem Hubrecht decided otherwise, and pushed the student into working on his own line of country, the nemertean worms. Oudemans duly presented his thesis on the circulation of the blood and the kidneys of the nemerteans in 1885.

But several years earlier, in November 1881, he had shown his independence of mind by publishing an article on the fables about the sea-serpent and its probable existence in *Album der Natuur*. At this time he only knew of some sixty reports and innocently supposed that the Stronsa beast was a genuine specimen and that the *Monongahela* story, which he had read about in the *Illustrated London News*, was perfectly true. He had none the less arrived at the conclusion that the sea-serpentmust be a mammal with four flippers, a long neck and a long pointed tail, and that zoologically it must be half-way between the dolphins and the pinnipeds. Had there ever been such an animal? According to the scientific knowledge of the day, there had: the *Zeuglodon cetoides* of the Neozoic Era, described by Sir Richard Owen. But it could not be the same species, for the sea-serpent seemed to have a very long neck, while the zeuglodon's was rather short. Oudemans therefore boldly proposed to christen the unknown animal *Zeuglodon plesiosauroides*, the 'plesiosaur-shaped zeuglodon'.

This was not a new idea. Apart from Schleiden's cryptic remark more than thirty years earlier, P. H. Gosse, with a stroke of genius, had said of the *Daedalus* monster in 1860:

> It is by no means impossible that the creature may prove to belong to the *Cetacea* or whale tribe. I know of no reason why a slender and lengthened form should not exist in this order. The testimony of Colonel Steele, who represents his animal as spouting,[1] points in this direction.

Gosse did not pursue this suggestion. He preferred the plesiosaur theory, and he seemed unaware that his conjectural 'slender and lengthened' cetacean was already known to the palaeontologists as the zeuglodon.

What had actually inspired Oudemans's theory, as he himself admits, was an article entitled 'Order Zeuglodontia' by Searles V. Wood, Jr., in *Nature* on 18 November 1880. More than thirty years earlier, when Wood read

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[1] The *Barham* sea-serpent, see page 233.

Owen's comments on the *Daedalus* sea-serpent, he was much struck by the remarks that the monster must clearly be a mammal. But he could not believe it could be a sea-elephant.

> Two or three years after this, on reading the description of *Zeuglodon cetoides*, from the Tertiary (probably upper Eocene) formations of Alabama, it struck me that the animal seen from the *Daedalus* may have been a descendant of the order to which *Zeuglodon* belonged; and I have ever since watched with interest for reports of the 'great sea-serpent'.

The examples which Wood used to illustrate his argument could hardly have been worse chosen. They were the whale-strangling sea-serpent seen by the captain of the *Pauline* and the one which juggled with a whale in front of the *Kiushiu Maru*. And in the latter case he even thought that the whale's fluked tail was part of the same animal as the 'swan-neck' in front of it, and thence deduced that the sea-serpent was a cetacean (see Fig. 63B on page 282).

As the reader may have guessed, Wood knew little or nothing about the anatomy of the zeuglodon, and admitted as much.

> As I have not been able to find any descriptions of the skeleton of the *Zeuglodon*, I venture to draw attention to the subject through your columns, in the hope that among your many readers in America this letter may attract the notice of someone who will tell us whether what is known of the osseous structure of *Zeuglodon cetoides* is or is not consistent with the representation in the *Graphic*.

All that Wood knew about the zeuglodon was that Sir Charles Lyell said that it was at least 70 feet long and that its teeth revealed a carnivorous diet. This, he thought would be enough to make it the terror of the seas.

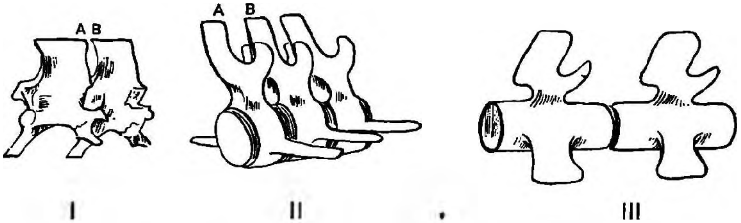
No one seems to have answered Wood's appeal, but, even when he had read the subject up in the article on 'Palaeontology' in the *Encyclopaedia Britannica*, he still refused to admit that his swan-necked sea-serpent and the rather short-necked *Zeuglodon cetoides* were incompatible. It was another Wood, the Rev. J. G. Wood, who tried to solve this difficulty by wondering somewhat disingenuously whether the short neck might not be 'an error of the restorer'.

We have already met J. G. Wood, and read the reports be collected in Boston. But I have reserved his opinion about the animal's identity until now. He had come to the same conclusion as the young Oudemans and the other Wood, but he put his case most ably and based it on much more solid arguments. What, he wondered, could the animal be which Lawrence and Wasson had described?

> It is quite certain that it does not correspond with any contemporary animal at present known to zoologists. Mr. Arthur Lawrence offers a suggestion that it may

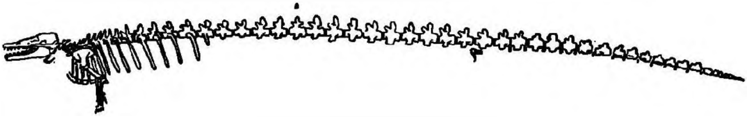
possibly be a surviving Plesiosaurian … The distance, however, between the great saurians which are now only known by their fossil remains and those of the present day is too wide to be bridged by a survivor.

But though not a surviving saurian, it may be a survivor of some group of animals which is on the verge of extinction. In the first place, it cannot be a serpent, as the peculiar movements which have been described cannot be performed by a serpent; the structure of the vertebræ prohibiting them, as may be seen from the accompanying illustration. [Fig. 73, I.] There are plenty of sea-serpents, none of them measuring more than a few feet in length, and all have the tail flattened sideways, so that they undulate through the water, just as an eel does. The monster in question, however, undulates up and down, 'like a caterpillar.' Now, the only marine animals which possess this power are those belonging to the whale tribe. These, as may be seen from the structure of their vertebræ, can undulate up and down, but not sideways, the projections on either side of each vertebra interlocking with the vertebra immediately behind it. [Fig. 73, II.] Now, suppose that there might be a much-elongated cetacean, being to the rest of the whales what the eels are to the fishes, the creature would behave exactly as our sea-serpent behaved. Every movement of the creature is cetacean. The habit of pushing the head out of the water is distinctly cetacean, the sperm-whales being much addicted to this custom. The caterpillar-like bend of the body is also cetacean, and may be witnessed any day when a school of porpoises curve their graceful course over the waves. The sudden rising of the body, as described by Mr. Wasson, is also a cetacean characteristic. The whales, when their lungs are inflated, are a little lighter than water. But they possess the power of contracting their whole bodies, so that they can sink like stones,—a property which is extremely exasperating to the whale-fishers. When they relax the muscular apparatus by which this object is effected, the body resumes its former size, becomes lighter than water, and surges to the surface, exactly as described by Mr. Wasson.



73. Vertebrae of: I. snake; II. whale; III. zeuglodon; after the Rev. J. G. Wood

The unexpected harmlessness of so powerful a creature is another characteristic which, fortunately for man, belongs to the whales,—creatures which never attack but under exceptional circumstances. There are many whales now known to science, some of them being much more slender than others. It is certain, moreover, that there are many which are as yet unknown. There is, for example, a species which is only known by a single lower jaw, which is remarkable for possessing but one tooth on either side.[1] What the rest of the whale may look like no one knows. Being one, there must be others. Yet, where they live is at present a mystery, and but for that single jaw we should not have known of their existence. At present, no snake-like or eel-like cetacean is known. Such a creature has, however, existed, and is registered under the name of zeuglodon, that is yoke-tooth, because the teeth are yoked together by bony ridges. Boston possesses a complete set of the vertebræ of a zeuglodon, a specimen which is, I believe, unique. There are plenty of vertebræ and other bones scattered about, out of which a zeuglodon of any length might be constructed;[2] but the Boston vertebræ belong to the same individual, so that its length can be estimated with tolerable accuracy. The bones belong to the Tertiary period, and were discovered in Alabama, by Mr. Buckley Clark. Beside the vertebræ, he found parts of the skull and lower jaw, together with numerous pieces of bone. The length of the animal, when alive, must have been about seventy feet,—precisely the average length of the sea-serpent. Although the vertebræ are much damaged, several of them are sufficiently perfect to show the peculiar bony processes which prevent the whales from bending their bodies laterally.[3] [Fig. 73, III.] Yet, although whale-like, the creature was not a true whale, as is shown by the nasal openings, which are not like those of the whale. They do, however, correspond fairly with Mr. Lawrence's description of the nostrils of the creature which he saw.



74. Zeuglodon's skeleton

Now we will take the front portion of the zeuglodon as shown from existing bones. If we imagine that the bones are clothed with flesh and blood, we shall find that such an animal would coincide with Mr. Lawrence's sketch, and with the narratives of other eye-witnesses. Here we have the tapering head, the sudden width at the shoulder, and the existence of flippers, which did not project from the water. Of the dorsal fin the skeleton would give no indication. The neck appears rather short, but that may be an error of the restorer; just as the palæotherium, which was restored as a short-legged tapir, proves now to have been a horse-like creature. The shape of the skull corresponds with that of Mr. Lawrence's sketch; so does the width of the shoulders, and so does the whale-like arm with its hand. Without venturing to make an assertion, I may at all events suggest

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[1] Probably a species of *Mesoplodon*, some of which are still known from only one or two specimens.

[2] As Dr Koch did.

[3] This is going rather far. While mammals find vertical movements easier and more natural, lateral movements are still possible. In the big whales the corkscrew movement of the tail which drives them along is a combination of vertical and horizontal movements.

> that Mr. Lawrence's theory of a surviving being belonging to a race verging on extinction may be a correct one, but that the survivor (or survivors) belongs not to the saurians, but to a cetacean animal, which, if not an actual zeuglodon, has many affinities with that creature.

There is little to add to the Rev. J. G. Wood's conclusions. We can, indeed, strengthen his arguments in the light of modern knowledge.

Arthur Remington Kellogg, the American who charted the state of our knowledge of the Archaeoceti in 1936, recalls that the celebrated palaeontologist, Edward Drinker Cope, believed,

> that the regular articular end of the first sternal segment of *Basilosaurus* indicated that the animal was in the habit of rearing the front part of the body out of the water; and that this assumption was supported to some extent by the articular relations of the dorsal vertebræ.

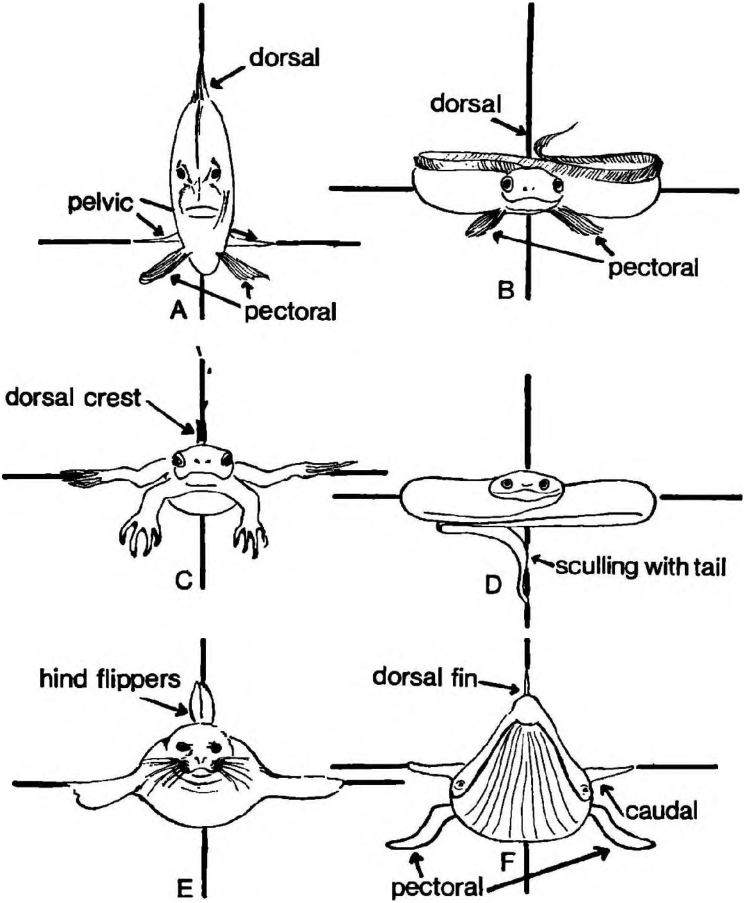
This habit is certainly very characteristic of the New England sea-serpent. Furthermore, while the Massachusetts Bay animal seemed to have smooth skin on its head and neck, its back was covered with big scales. And it has been thought that all or part of the zeuglodon's body was protected by bony dermic plaques.

Such armour was once very fashionable among the cetaceans. Kükenthal maintained in 1893 that the rows of tubercles on the skin along the spine of porpoises without dorsal fins of the genus *Neomeris*, and the spines on the dorsal fin of the Spiny Porpoise (*Phocaena spinipinnis*) were vestiges of it: and it is significant that these nodules are more widespread in embryos than in adults. A fossil Miocene dolphin from Croatia (*Delphinopsis freyeri*), had an armour of dermic bones all over, as far as we can see from the marks left by its skin. And near the skeletons of zeuglodons polygonal bony plaques have been found which such eminent scientists as Johannes Müller, Wilhelm Dames and Frederic Lucas thought were pieces of their armour.

But, alas, it was shown that these bones really belonged to a Neozoic tortoise (*Psephophorus*). The attack on the theory of armoured Archaeoceti began. Alfred Howell showed in 1927 that the tubercles in *Neomeris* were merely thickened epidermis, with no trace of ossification. But as the impression of bony tubercles left by *Delphinopsis* has never been otherwise explained, the theory is still fairly strong.

The partially scaled sea-serpents would seem to confirm their possible relationship with the Archaeoceti, of which the zeuglodons are the best known.

Most of the reports cited by J. G. Wood also speak of a dorsal fin, like that of a blackfish (i.e. triangular), a few feet behind the head. This does not agree with what we know (or think we know) about the zeuglodons, which are


dorsal
pelvic
A
pectoral
dorsal
pectoral
B
dorsal crest
C
D
sculling with tail
hind flippers
E
dorsal fin
caudal
F
pectoral

75. Organs of propulsion and stabilization, arranged in three perpendicular planes in aquatic animals: Fishes: A. perch, B. eel; Reptiles: C. water lizard, D. sea-snake; Mammals: E. seal, F. rorqual

shown in all reconstructions with a perfectly smooth spine (Figs. 38 and 76).

Personally I am inclined to think that this is a mistake, and that these serpentine cetaceans must have had a dorsal fin or its equivalent, and for this reason: generally speaking we find that all the aquatic vertebrates, especially the marine ones, have organs of propulsion and stability so arranged in three dimensions as to enable them to keep their equilibrium in rough water and to move without turning on any of their axes. Nature has the same task as the designers of ships or aircraft trying to prevent the uncontrolled movement of pitching, rolling and yawing. There are, of course, very many solutions to this purely mechanical problem, and they chiefly depend on the plane in which the chief body movements are made: the fins may be larger or smaller, the tail may spread out, whole or part of the body may be flattened, there may be a crest or keel.

In fishes there are: (1) organs in the vertical plane of symmetry, single fins such as the caudal, dorsal and anal; (2) organs which are perpendicular to the plane of symmetry, i.e. in a transverse plane, pectoral fins; (3) organs that are horizontal in the frontal plane, pelvic fins.

This basic anatomy can be modified, fins may dwindle or disappear if compensated for by other means. The body may be spread out and flattened, sideways in the eels, from top to bottom in the rays. Ridges appear on the sides of such racing fish as sharks, tunny and mackerel. Large undulatory movements steady it in one plane and drive it along in another.

We find the same three-dimensional architecture in whales. But the absence of pelvic fins—or hind-legs if you wish—is compensated for by the very wide horizontal tail. The development of this tail, which has to be horizontal to undulate, mammal-fashion, vertically, has made hind-legs unnecessary. Dr Serge Frechkop even suggests that the tail has derived from the vestiges of the hind-legs. Certainly there is a remarkable similarity in shape and in function between the cetaceans' wide tail and fan-shaped hind-legs of the seals.

The wide tail acts as a hydroplane and as a stabilizer. But what did the zeuglodon use for the purpose in the absence of a whale's moon-shaped tail or a seal's hind-legs? It is now generally admitted that contrary to the early reconstructions it could have had a small tail fin. 'From various details of the skeleton[1]', writes the great Dutch expert on the cetaceans, Professor Slijper, 'we may infer that they probably already possessed a horizontal caudal fin, even though it was smaller than in recent animals.' Others differed. Howell thought the anatomy of the tail indicated 'that the spinal musculature was not developed to a point where it could handle a caudal fluke of a recent cetacean type'. It was more likely to be very mobile in undulatory movement. Moreover 'the propulsive mechanism must have been in the nature of a pair of symmetrical and continuous lateral fin-folds extending in a fore-and-aft direction along most of the length of the tail'.

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[1] Atrophy of the last eight vertebrae in the tail, and traces of arteries betraying a considerable blood-supply.

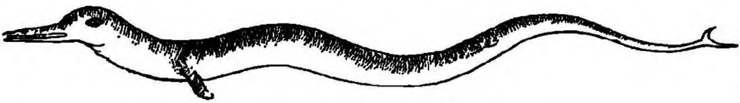
This theory is all the more likely because two little lobes at the end of a very long tail would hardly increase its efficiency, nor is this arrangement adopted by any aquatic animal with a long tapering tail, whether fish (eel), amphibian (newt), reptile (plesiosaur) or mammal (Giant Otter or Saro (*Pteronura*)). They all have a lanceolate, scalloped or generally widened tail. And most probably some of the Archaeoceti chose a long flattened tail and others one with crescent flukes.

Neither arrangement would be enough to ensure stability. In the present cetaceans the smaller the tail the bigger the dorsal fin. Thus in the Killer-whale, which has the highest dorsal fin of all, the tail flukes do not spread far, while, in the Humpback Whale and the Sperm-whale which have broader tails, the dorsal fin is very small or even non-existent. Stability around the fore-and-aft axis (i.e. resistance to rolling) can obviously be due to a fin in the vertical as well as the horizontal plane.

But there is still stability in other planes to be dealt with. In those cetaceans which rely on a broad tail for stability around the fore-and-aft axis, the complete absence of a dorsal fin is compensated for by a ridge along the head (as in the Right Whales where the head occupies a third of the total length) or by a row of little humps along the spine, as in the Grey Whale or the Sperm-whale. This prevents the whale from yawing from side to side as it paddles itself slowly forward and keeps it on a straight course, just as a dinghy with a keel holds its course much better than a flat-bottomed rubber raft.

All sea-animals thus need organs of locomotion and of stability in all three planes, though they are less necessary in slow and lazy creatures, like the sirenians which browse in estuaries and do without any dorsal ridge at all.

But zeuglodons could not do so. With their relatively small mouths they could not have trawled for their food like the whalebone whales: they must have hunted their prey—fish and squids—at top speed, and therefore have been built for the chase. With their tails ending in a point, or at all events



76. Recent reconstruction of the zeuglodon after Professor Slijper

with a very small driving surface,[1] it is quite inconceivable they should have had no dorsal fin at all. Of all known cetaceans they need a big dorsal ridge the most. It could be a single dorsal fin, either tall and narrow or low and long; it could be a combination of the two, a small dorsal fin followed by a row of small humps. This would agree with the arrangement on the Massachusetts Bay sea-serpent.

This all supports J. G. Wood's argument. But how does he explain the clear contradiction between the zeuglodon's short neck and the conspicuously long one so often seen in sea-serpents? Of course he had reason enough to doubt some palaeontological reconstructions. The zeuglodon itself was first taken for a huge saurian and called *Basilosaurus*. When Waterhouse Hawkins stocked the gardens at the Crystal Palace with huge concrete reconstructions of dinosaurs as they were thought, in the middle of the nineteenth century, to have been, the *pièce de résistance* was a huge hollow iguanodon, inside which a dinner was given on 31 December 1853 with Sir Richard Owen solemnly presiding. The iguanodon was shaped like a monstrous rhinoceros with a huge tail. But in 1878 a couple of dozen complete skeletons were found in coalmines at Bernissart in Belgium. The bones were all in place and showed that the iguanodon was more slender and upright like a kangaroo, and that the horn which had rashly been put upon its nose was really a spur-shaped thumb. The most distinguished British scientists had been dining in the belly of an absurd monster worthy of a horror-comic.

The whole history of palaeontology is littered with such blunders. Cuvier himself thought from studying its teeth that the iguanodon was not a reptile at all, but a true rhinoceros, and that the chalicotherium, that paradoxical clawed ungulate, was a giant pangolin. But we now know that there were no such gross errors in restoring the zeuglodon as Hawkins made with his iguanodon. Far too many complete zeuglodon skeletons have been found in Eocene deposits all over the world, from England to New Zealand, and North America to Egypt, for there to be any doubt. The zeuglodon had a flexible but relatively short neck, certainly no longer in proportion than a seal's.

A zeuglodon with this anatomy might account for many descriptions of sea-serpents, but not those which speak of a swan-neck or something like a huge walking-stick. But this does not mean that these sea-serpents could not have been related to the zeuglodon. Among the Archaeoceti it might have had long-necked cousins, for this sub-order shows a marked tendency toward elongation. Remington Kellogg has shown that the elongation of the lumbar vertebrae in some of the Zeuglodontidae is unique in mammals. At first sight the elongation appears chiefly in the tail, but in fact it affects the whole body, for the thoracic vertebrae are just as elongated. Even the skull is very long and narrow and has a sagittal bony ridge.[1] It would thus not be surprising if in some kinds of Archaeoceti the neck had also been affected by this tendency to elongation.

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[1] The argument that organs of stability are needed in all three planes shows that zeuglodons must have the tail wider at the sides. Otherwise they would have had to move by lashing it from side to side like the Muskrat (*Ondatra*) and Otter-shrew (*Potamogale*) whose tails are flattened at the sides, an extremely rare structure in mammals. This method of propulsion agrees neither with the zeuglodon's general anatomy nor with the structure of its vertebrae.

We know only a tiny proportion of the creatures that once lived on land, fewer in the sea and fewer still in the ocean. We know nothing about the origin of the cetaceans which must have occurred in rivers and lakes where the sediments have not been preserved. Nor do we know anything about their subsequent evolution. 'It is also possible,' writes George Gaylord Simpson, the famous American palaeontologist, 'that some crucial later parts of the history occurred in the great ocean basins and did not directly involve the littoral waters and epeiric seas where almost all the known fossil cetaceans lived.' Geologically speaking our present cetaceans seem to have appeared from nowhere with all their highly specialized characteristics.

The Archaeoceti have preserved some primitive features, such as differentiated teeth, nostrils at the end of the nose, movable neck and feet not fully transformed into flippers, but they form a quite separate line from the toothed and the whalebone cetaceans, and they also appeared specialized at the outset. Their history is no less fragmentary than that of the dolphins and whales.

The zeuglodons' hearing apparatus is very like that of recent cetaceans and shows that they were able to dive to great depths: they were beasts of the high seas, most unlikely ever to be washed up. Only because vast stretches of sea have retreated have we been able to find their remains in sediments which were once the sea-bed. But if their specialization continued might they not have dwelt even more exclusively in the ocean?

Perhaps the reasons why we have never found the ancestors of cetaceans in geological strata nor sea-serpents washed up on the beach may be the same. Though Professor Simpson formally declared in 1945 that 'it is clear that almost all existing kinds of mammals have been found', he has himself given us the best arguments for confuting him.

Young Oudemans did not know all these good reasons for identifying sea-serpents with the zeuglodon when he wrote his first article in 1881. Indeed he later found good reasons for not doing so and regretted his earlier view. In his great monograph on the sea-serpent, published eleven years later, he attacks Searles V. Wood, Jr very sharply for having expressed this opinion which had set him on the wrong road, and ridicules him for thinking that a zeuglodon could have a long neck and a fluked tail like the present whales. And when he came upon the Rev. J. G. Wood's article after having completed most of his own book he gives it no more than a few lines in an appendix, remarking on its considerable interest but 'zoological inaccuracies' and putting an ironical '(*nota bene*!)' against the suggestion that the short neck might be 'an error of the restorer'. And he attributes his own earlier opinion to his youth and lack of information:

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[1] In recent cetaceans the jaws are sometimes elongated into a beak, but the cranium itself is closed up towards the thorax to form a compact streamlined body, and this produces a transverse bony ridge. This is one of the anatomical features which underline the gap between the Archaeoceti and our present Odontoceti and Mysticeti, and, as Serge Frechkop has wisely remarked, 'forces us to exclude the first without hesitation from the ancestral line of the second.'

> because, like so many other writers of the subject, he believed that he could solve the difficult question without reading, if not all that had been written about the animal, at least much more than some few reports!

Why did he change his mind? He had, of course, read a lot more reports, and now had 187 (not counting those he thought were mistakes or hoaxes) instead of 65. He had also grown in age and experience—not necessarily an advantage in producing a revolutionary theory. In 1885, after spending long hours cutting and straining sections of worms and examining them under the microscope, he had presented his doctoral thesis on the circulatory and excretory systems of the nemerteans. His prestige was now such that he was soon afterwards made Director of the Royal Zoological and Botanical Gardens at The Hague. He was then able to become more familiar with the large living animals in his care in the zoo in that city. From his writings it seems that his interests at this time were divided between the recently extinct birds of the Mascarene Islands, the great giant squids washed up on the shore and, significantly, the seals. By this time he was a handsome man with a slightly drooping moustache, a fringe of beard and a keen and humorous eye. He decided to write a detailed study of the problem of the sea-serpent that had puzzled him for so long. From 1889 to 1892 he spent all his free time on this project. The result of his research and thought was not a sort of zeuglodon this time, but a pinniped, a long-necked cousin of the seals, sea-lions and walruses.

This change of opinion did not seem as radical then as it does now. At the end of the last century it had been thought for some time that the zeuglodon was closely related to the pinnipeds. I believe that the turning-point in Oudemans's new theory was a paper by Professor D'Arcy W. Thompson which appeared in the proceedings of the International Zoological Congress at Paris in 1889, 'Should the Zeuglodons be linked with the Cetacea?'

Thompson, the professor of zoology at University College, Dundee, said no. At this time the zeuglodons were believed to be a transitional group between the pinnipeds and the cetaceans, which T. H. Huxley thought formed a link between the two, though they were still classified as cetaceans. Professor Thompson maintained they had too many primitive features to be cetaceans and that they were nearer the pinnipeds. Oudemans was so taken with this idea that he went further and put them right in with the pinnipeds. He even invented an imaginary long-tailed protopinniped, derived from the otters, to give birth to both the zeuglodons and the pinnipeds, these first pinnipeds having the long ancestral tail, like the zeuglodons. Then one gradually lost its tail, turning into the seals, sea-lions and walruses, while the other kept it and grew to gigantic proportions to become Oudemans's sea-serpent.

Such a family tree could no longer be accepted today. New palaeontological discoveries have put the zeuglodons in the Cetacea, which are now divided into the Archaeoceti, the Odontoceti with teeth and the Mysticeti with whalebone, and there is no direct relation between the cetaceans and the pinnipeds. The best experts on the Cetacea now agree that they are nearer to the ungulates than the carnivores, and that the pinnipeds undoubtedly belong to the latter.

In 1926 Professor Raoul Anthony thought, as John Hunter had done, that the Cetacea were nearest to the odd-toed ungulates (tapirs, rhinoceroses and horses) for anatomical reasons. In 1950 the American serologists Boyden and Gemeroy found they were nearest to the even-toed ungulates (pigs, hippopotami and ruminants) as a result of blood precipitation tests. It is doubtless safer to take Serge Frechkop's (1944) line and say that 'their emancipation from the common stock of the mammals must have preceded the separation into carnivores and ungulates'. In any case whether it occurred before or after these groups separated it was long before the pinnipeds branched off from the carnivores.

Without entering further into phylogeny, there is one important difference between a sea-serpent that is a zeuglodon and one that is a pinniped. The first has front legs only. The second has two pairs of legs. Two legs or four, that is the question.

Dr Oudemans's method, as he explains in his preface, is inspired by Chladni's classic work on meteorites published in Vienna in 1819. Meteorites have always fallen on the earth. Some people collected them as curiosities. Some scholars believed they came from the sky, but many were sceptical and made such cruel fun of this idea—was the Man in the Moon throwing stones?—that collectors hid their stones or threw them away. The truth would not have emerged without Ernst Florens Friedrich Chladni, who believed firmly that they came from the sky. He took the trouble to collect all the accounts of observations of meteoric stones from Antiquity to the nineteenth century and showed a vast amount of concordant independent evidence. The unbelievers' eyes were opened. Meteoric stones were found again, and shown to be different from stones on earth. Their existence was proved once and for all.

Oudemans set about tackling sea-serpents in the same way. First of all he patiently and laboriously collected all the reports of sea-serpents, or of sea-monsters that might be sea-serpents, that he could find in books, magazines and newspapers. His bibliography includes 330 titles, 200 of which he had consulted himself, the rest being cited at second hand. Having copied all the interesting passages in his small neat hand and arranged them chronologically, he set about sifting his material. First he eliminated the deliberate hoaxes and fanciful tales that had brought the subject into disrepute. Usually this is easy, because hoaxers generally give themselves away. But there were one or two very doubtful cases where Oudemans either rejected genuine observations for the wrong reasons, or accepted reports of very dubious authenticity. This was because he had long had a clear idea of what the sea-serpent was like and used it as a criterion, accepting or rejecting descriptions accordingly. The great fault of Oudemans's book is that it is based on the preconceived notion that there is only one kind of unknown serpentine animal in the ocean. Now this is rather as if one were to say that there could be only one kind of large cigar-shaped animal in the ocean. In fact there are lots of them, belonging to many distinct groups: sharks, bony fishes like tunny and swordfish, toothed cetaceans, whalebone whales and seals. If we turn to the past we can also add those reptiles the ichthyosaurs. Why should it not be the same for serpentine animals? We know that there are or have been all sorts of serpentine animals in the sea: sharks, like the Frilled Shark, bony fishes like the eels and oarfish, reptiles like the plesiosaurs and very different mosasaurs, and finally cetaceans like the zeuglodon. It would, *a priori*, be surprising if there were not in the vastness of the ocean more than one type of great serpentiform besides those duly listed.

But Dr Oudemans had every excuse. It needed remarkable courage at that time to say that there was even one kind of sea-serpent. Despite his authority and conscientiousness Oudemans was attacked most mercilessly. But generally speaking he shook the scepticism in scientific circles. If he had been more daring he might not have been believed at all. Scientists attack the unknown by sending daring patrols into enemy territory. But it doesn't do to be too daring. The patrols must not lose contact with their main forces.

After having dealt with the hoaxes and mistakes, Oudemans went on to weed out the honest reports which seemed to refer to known animals: giant squids, basking sharks, nemertean worms, oarfish, sea-snakes and huge eels.

This left him with 162 reports between 1522 and 1890. In an appendix he added another 25 received shortly before going to press, thus bringing the number up to 187, but the whole of his analytic work is based on the original 162.

A few of these 187 observations must be rejected as too doubtful or vague, but they are fairly rare. The number of valid observations is vast compared with how little information we have about some giants of the sea whose existence is well known. Thus in 1936 Dr P. Chevey of the Oceanographic Institute of Indo-China showed that the Whale-shark (*Rhineodon*), had been seen only 78 times. 11 other times it had probably been seen, but this was not absolutely certain. Thus in 1936 there were only 89 observations of an animal more than 50 feet long, and so slow, gentle and heedless that it can very easily be approached. This explains why some have been photographed and harpooned, and ships have run into them.

At the same date, Oudemans, who had gone on collecting reports of sea-serpents after his book appeared, had no less than 250. This relative abundance of reports of animals which seem to be very agile and swift and well able to avoid encounters, can only mean either that there is one common species or several less widespread ones.

Oudemans endeavours to show that most of the descriptions of sea-serpents, far from being contradictory, agree, and may reinforce one another, and that one may thence deduce not only a very detailed description of the animal, but also many details of its physiology, habits and even psychology. His conclusions run to seventy-seven quarto pages.

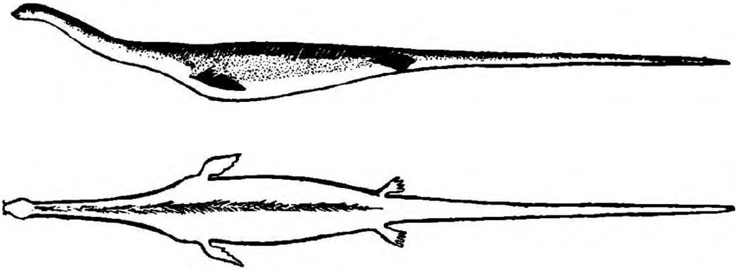
I cannot offer a better résumé of them than that given by Professor Émile Racovitza:

> The dimensions given by different authors vary greatly; we may choose between 20 feet and 250 feet, but those most often given vary between 50 and 100 feet. The head is very small compared to the length of the body (about $\frac{1}{25}$ of the total length), and its shape is most often compared to that of a Snake, but sometimes also to that of a Dog, a Walrus, a Seal or a Sea-lion. The snout is long, and whiskers are sometimes reported on its extremity. Beneath the throat and the sides of the neck folds have been seen; the mouth is transverse and large, and the eyes are very big and shining, black with a red gleam. The neck is very long (about $\frac{1}{5}$ of the total length), thinner than the head, and clearly distinct from the body, because of a corresponding enlargement of the shoulders, to which are attached a pair of fins like a turtle's or a seal's. The rounded body is larger in front than behind and ends in an enormous round and pointed tail, which equals almost half the total length of the animal. This appendage is cylindrical and much thinner than the body even at its base; in front of its root are two flippers, much smaller than the fore-flippers. The skin is described as smooth and shining, and only twice are scales mentioned. Oudemans thinks that as the animal has whiskers the skin must necessarily be covered with fur, and that its smooth and shining appearance is due

> to the fact that the fur is wet and clings to the body. The skin of the Seals presents the same appearance when these animals come out of the water.
>
> The colour of the Great Sea-Serpent is said by some to be yellowish grey, but most observers say brown; in any case the colour is darker on the back than on the belly, which is sometimes seen to be white in colour. Some reports speak of a mane reaching from the top of the head to the beginning of the tail, along the median dorsal line. It is thicker on the neck and shoulders and has been compared to a horse's mane or a bunch of seaweed. But other observations do not mention it or say that the animal seen had none; Oudemans explains these discrepancies as a sexual difference, only the males having manes.
>
> The food of the Sea-Serpent seems to consist of fish, for it has often been reported following shoals of these animals; it even attacks Seals and Dolphins, if we are to judge by the fear its presence arouses in schools of these Mammals.
>
> When our animal appears on the surface it breathes noisily, probably through the nostrils; at all events breath is seen coming from the end of the nose and not from the top of the head as in the Cetacea. Its passage on the surface is shown by a greasy trail, and it gives off a strong and most unpleasant smell. It often swims with its head out of the water, and the mobility of all parts of its body is very great. The Sea-Serpent moves by making vertical undulations, but can bend in a horseshoe curve in any direction, and thus big folds appear on its body as in animals with a thick layer of fat. It uses its flippers alternately, like a Turtle, when moving slowly, but when it swims fast performing vertical undulations, it holds its flippers against its body. While it is moving in the water only a small part of the body is visible and the tail is not shown.
>
> The characteristic of the Sea-Serpent's psychology seems to be its timidity; there is no instance of this colossus attacking those who witnessed its evolutions, even when it is fired upon. Its character is fairly playful as it often leaps and indulges in sportive gambols. It often appears in fine weather and has been seen in all seas except the Antarctic below latitude 46° S.

Sea-serpents seem therefore to be completely cosmopolitan. If they are almost always seen in the Atlantic and only rarely in the Pacific and the Indian Ocean this, as Dr Oudemans pointed out, is because the Atlantic is the 'highway of the nations' I have already remarked that as time passed and new sea-routes increased in hitherto fairly unfrequented waters the reports from distant places became more numerous. This tendency does not become marked until the twentieth century: while sightings decrease in the seas where the traffic becomes too thick, their number grows in new shipping areas, particularly the Pacific.

There are obvious reasons why a sea-serpent, or any other object on the surface of the sea, is most likely to be seen when the surface is smooth and the visibility is good. All the same the sea-serpent did seem to have its preferred climate. Oudemans noted its marked taste for fine weather: it is hardly ever seen except in warm sunny weather and calm seas. Moreover the places where it has been met show that it prefers to swim in warm ocean currents. This strong liking for warmth is why it generally appears in the Northern Hemisphere in summer and migrates in winter to the Southern Hemisphere to enjoy the southern summer. As most of the big shipping lanes are in the Northern Hemisphere we see why *the sea-serpent always makes news in the summer.*



77. *Megophias*, side and top views, after Oudemans

Oudemans then went on to say exactly what the sea-serpent is. Although, by the law of priority it must keep the name *Megophias* or 'Big Snake' given it in 1817 by Rafinesque, it was not a reptile but a mammal, a sort of giant long-necked seal.

It is true that his beast has four webbed feet like a seal's, humps which might be due to masses of fat and a pointed head, but Oudemans bases his arguments on subtler evidence: firstly, that the animal is sometimes described as spouting vapour makes him think it is warm-blooded and thus a mammal. As these jets are sometimes double and come from the end of the nose and not the top of the head, therefore from nostrils and not from a blowhole, it is not a cetacean, at least one belonging to recent groups. Moreover the cetaceans have only one pair of flippers. Therefore *Megophias* must belong to the other big group of sea-mammals, the pinnipeds. Secondly, Oudemans remarks, with very few exceptions it is described as smooth-skinned without scales. The mane, which characterizes the male and is so often mentioned, and likewise the whiskers, also argue in favour of a mammal, particularly a pinniped. Moreover he thinks it unlikely that a sea-reptile would live in such cold waters as those around Greenland, Iceland and Norway

But Oudemans does not rest there and goes on to settle *Megophias*'s probable position in the mammals' family tree on one fork of the pinniped branch, the seals, walruses and sea-lions being on the other.

These then are Oudemans's views on the subject. It would be unfair to quibble about his genealogy, which agrees with the ideas of his time, though now outdated. His main idea is still valid, *Megophias* is a pinniped. But is this certain or even likely? Is *Megophias* really a mammal?

Let us be the devil's advocate for a moment. Careful though it is, Dr Oudemans's argument about the sea-serpent's identity is not absolutely convincing. In shape his *Megophias* is much more like a plesiosaur than any sea-mammal. Moreover some witnesses have said it has scales. Faulty observations, says Oudemans. Even if they are, there is no reason why reptiles so well adapted to the sea as plesiosaurs should not have lost their scales and have smooth skin. This is what has happened to such fish as eels; a similar phenomenon occurs in such aquatic mammals as the cetaceans. Finally one of the rare living sea-reptiles, the Leathery, or Leather-back, Turtle (*Dermochelys coriacea*) has no scales on its head, neck and flippers; and what remains of its carapace is covered with a sort of thick tanned-looking leather.

We also know for a fact that some great reptiles of the Mesozoic Era had no scales. In 1908 Charles H. Sternberg, a Kansas naturalist, discovered in an Upper Cretaceous sandy stratum the mummified carcase of a *Trachodon*, a sort of duck-billed aquatic iguanodon. Its skin was finely granulated like a golf-ball, but quite lacking in scales.

There are, of course, the whiskers. But on examination we find that nobody had expressly mentioned them before Oudemans except old Pontoppidan. And the mane need not have been made of hair: the cutaneous filaments in some reptiles' crests, the strange fuzz on the hairy frog and the fibres in some fishes' fins could all be mistaken for hairs. Oudemans explains that the mane appears on some sea-serpents and not on others due to sexual dimorphism as in lions. But in the maned sea-lions, which Oudemans makes *Megophias*'s closest cousins, the females are no less maned than the males. On the other hand on many living lizards—and there is no reason why the great Mesozoic saurians should not be the same—such cutaneous appendages as dorsal crests, wattles, spines or dewlaps are almost always found to be larger, or even exclusively, on the male. This is particularly noticeable in the iguanas, anolis, dragons and basilisks.

Oudemans also thinks it is hardly likely that sea-reptiles would live in cold Scandinavian waters. But, in fact, what do we know about the physiology of the great reptiles of the Mesozoic Era? There is no evidence that they were cold-blooded, or rather poikilothermic, with their internal temperature following every change of the external temperature, as in living reptiles. In any case this process is not always complete and is affected by size. Experiments by Edwin Colbert, R. B. Cowles and Charles M. Bogert on alligators in Florida have shown that in them the speed of temperature change was inversely proportional to the size. Professor Jean Piveteau therefore thinks that in the giant saurians of the Mesozic Era the body temperature changed only slightly with the surrounding temperature. They could thus to some extent enjoy the same homothermy as mammals and birds.

In some Mesozoic reptiles this homothermy may even have been based on a regulatory system as advanced as that in so-called 'warm-blooded' creatures. Some palaeontologists are inclined to think the 'pneumatic', or hollow air-filled, bones in dinosaurs are linked, like those in birds, to a constant temperature. Moreover, in the fossil impressions of that flying reptile, the Rhamphorhynchus, traces of sebaceous glands and even of tufts of hair have been found, which reveal a process of temperature regulation.

Thus it is very possible that plesiosaurs could stand much colder temperatures than crocodiles can. Moreover there is a contradiction in Oudemans's argument: he says that *Megophias* cannot be a reptile because it is often found in Scottish and Norwegian waters, but he stresses that it enjoys warm currents and makes long migrations to find a more clement climate. Using Oudemans's own arguments we can show that *Megophias* is most unlikely to be related to the pinnipeds, most of which live in the Arctic or Antarctic polar waters and follow cold currents when they leave them. *Megophias*, on the other hand, has, with one exception, never been seen in the Arctic nor below 45° S. If we look at where it has been met we see that it *hardly ever leaves the warm currents.*

The argument based on vapour from the nostrils loses much of its point when we admit that the great sea-reptiles of the past may have been warm-blooded. Moreover contact with cold air is not the chief cause of the vapour condensing when whales blow. Otherwise how could one see them do so in the tropics? The breath becomes visible, like the trails of high-flying aircraft, because of the fall in temperature when a gas is suddenly decompressed. The air in the lungs, compressed when the whale goes deep, suddenly expands when the blowhole opens, and the water vapour in it condenses. A reptile emerging from the depths could also have a visible breath. The only living sea-lizard, the Sea Iguana, or Crested Amblyrhynchus, of the Galapagos Islands, sometimes blows thin jets of vapour from its nostrils.

Oudemans's arguments are therefore far from finally settling whether *Megophias* is a mammal. The best proof still remains the beast's vertical undulation, and this is the only sound support of his theory.

The Achilles' heel of Oudemans's work is that he identifies *Megophias* as a pinniped and nothing but a pinniped. The whiskers around the mouth are far from being established. Nor are pinnipeds the only creatures in the sea to have whiskers. For all we know the Archaeoceti—and particularly the zeuglodons—may have had them.

Oudemans's *Megophias* has, it is true, four flippers, which clearly prevents it from being a cetacean. But how many reports in *The Great Sea-Serpent* is this feature based on? Only two!

The first tells of a four-legged 20-foot sea-serpent caught by peasants at Sundmör in Norway in the middle of the eighteenth century; the second of Captain Hope's sight of a similar monster from H.M.S. *Fly* in the clear water of the Gulf of California. One thing should have struck us about these two animals. The first 'must somewhat resemble a Crocodile', the second had 'the head and general figure of the alligator'—hardly what one would say of Oudemans's long-necked seal! These are, moreover, almost the only reports in his collection which compare the sea-serpent to a crocodile. We may also add the *Sacramento* sea-crocodile which Oudemans did not know about, and the *Eagle* sea-serpent which he rejected as too aggressive.

The significance of this is clear. The rare sea-serpents which have been seen to have four legs are very different from those generally described. They may well be reptiles. The others are certainly mammals and could well have only the two front limbs and thus be cetaceans and not pinnipeds.

Oudemans went wrong by not admitting there might be more than one kind of sea-serpent. Everything shows he was wrong and that his Identikit method must be used with great caution, or at least only after careful sifting. Suppose for a moment that an Identikit picture of a criminal was based on the testimony of people who mistook several different people for the wanted man. One would be tempted to accuse some witnesses of shortsightedness or of mistaken or false evidence because their description did not agree with what *seemed* to be the majority's opinion. And this would be right if there was only one criminal. But suppose there were many? If this were so not only would some truthful and accurate descriptions be wrongly discarded, but there would also be the risk of encumbering the description of the man seen by most witnesses with features really belonging to his accomplices, thus producing a composite picture unlike *any* of the criminals. This would make it almost impossible to convict any of them. For, if the criminal whom most witnesses had seen was arrested because his general appearance fitted the picture, the police would have to let him go because he lacked the amputated thumb (or some such conspicuous feature) which some witnesses had been positive about, having seen it on his accomplice.

Dr Oudemans makes the same fundamental mistake in thinking there can be only one kind of sea-serpent in the sea. This makes him reject some valid reports, accept some very doubtful ones and put forward some very far-fetched explanations to make good descriptions agree with his own notions. His *Megophias megophias* is a Procrustean bed upon which many sea-serpents have been dismembered.

I think Oudemans was aware, albeit unconsciously, of the weakness of his position. He knew that he was right about the main point: the sea-serpent really existed and was not what it was generally thought to be. But he seems not to have been confident that he had established its identity by legitimate means. This may explain why he was so quarrelsome with his adversaries and even with authors whose views differed little from his own. He is often unfair and does not recognize the value of those who had prepared the ground for him. 'Naturalists,' wrote Richard A. Proctor about the sea-serpent, 'have been far less disposed to be incredulous than the general public.' Upon which Oudemans comments bitterly:

> If it were only true! Hitherto at least *zoologists* have not admitted even the possibility of the existence of a still unknown species, called 'sea-serpent'.

The reader should know by now that this is not true and that Proctor was perfectly right. But it was Oudemans's foible to want to be the first zoologist to believe in the sea-serpent, as if there were not enough glory in having been the first to treat of it as completely as possible in a careful, systematic, courageous and often brilliant book.

Dr Oudemans's bitterness and sarcasm may also have been because he felt his book would get a hostile reception, and his fears were well-founded. The fact that he had altruistically written in English to reach the largest possible number of readers, although his command of that language was not quite perfect, and that of his Dutch printers still less so, laid him open to gibes from ungrateful Englishmen. Before it had even appeared it was attacked because of a misprint in a prospectus announcing its publication which referred to a report in *Nature* of 8 November 1880 instead of the 18th.

> As *Nature* was not published on November 8, 1880, [wrote a sarcastic contributor to that journal] a good many people may be tempted to think that this reference (due, of course, to a slip of the pen or to a misprint) is very suitable to the nature of the animal to which it relates.

And when the book came out the critics were in full cry:

> At first sight [said *The Times*] it looks like an elaborate scientific treatise and so no doubt it is seriously regarded by its author; but, on closer examination, it rather presents itself as a cumbrous and elaborate, albeit quite unconscious, joke.

As usual all those who attacked the book harped on the old story we always hear when an unknown animal is reported:

> We shall believe in its existence when its remains have been found and examined by competent naturalists, but not before ... First catch your hare, has always been regarded as a sound and even necessary piece of advice for those who would enjoy hare soup.

This, as I have said before, is a sterile, anti-scientific point of view which makes it impossible to make any advance in knowledge. It is true that some scientists adopt it, but not all scientists are scientifically minded. And, if we must rely on folk wisdom, I would answer La Fontaine's bearskin and Mrs Glasse's hare with the adage that you will soon die of hunger if you wait for roast larks to fly into your mouth.

Yet on the whole the zoologists were favourably impressed by Oudemans's book. In 1894 an Austrian oceanographer, Dr Emil von Marenzeller, published *Die Grosse Seeschlange*, a little booklet taking Oudemans's point of view (Kapitän-Leutnant Wislicenus and Carus Sterne did likewise in Germany). Several years later Dr Petter Olsson went further. A 'monster' was said to live in the great Storsjön lake in Sweden, so he made inquiries locally and collected twenty-two trustworthy reports. These showed that a big animal, varying according to the individual from 13 to 45 feet, really lived in the lake. It was grey, with a dog's head, webbed feet and shining smooth skin; and it undulated up and down as it swam. This, thought Olsson, must be an unknown pinniped, like Oudemans's *Megophias*.

In 1903 two of the best French zoologists, Professor Émile Racovitza and Professor E. L. Trouessart wrote long articles praising the book and introducing it to French readers. Ten years later the Director of the Paris Museum, Edmond Perrier, continued this propaganda, saying that the book was 'a veritable act of courage'. It has now become a classic, and no one would ridicule it without reading it, but much water has flowed under the bridge since 1892 and many sea-serpents have been seen, even by 'competent naturalists'.

In 1895, three years after his book appeared, Dr Oudemans resigned from his directorship of the Royal Zoological and Botanical Society because 'on certain points his ideas differed from his superiors'.' Soon afterwards he was made Professor of Biology at Sneek, and then at Arnhem at his own old school. There he taught for twenty-seven years, and during this time wrote many articles of popular biology, innumerable original articles on the Acarids and a study, now a classic, of the dodos and the solitaires, those fat torpid pigeons of the Mascarene Islands which died out in the last centuries. Reconstituting these birds from a few bones, sailors' tales, and drawings somewhat altered in the copying was not easy, but it was child's play after the sea-serpent.

In 1923 at the age of sixty-five he retired and set to work on his masterwork, *Kritisch Historisch Overzicht der Acarologie*, of which he finished only the first three parts, nine volumes in all. And here, oddly enough, he who had tried so hard to unify the sea-serpent did not hesitate to split the Acarids into two.

Meanwhile he went on adding to his files on the sea-serpent. After his book appeared, new reports, or old ones that he had overlooked, came to him from all over the world. Robert Phillips Greg, a British geologist, made his own archives over to him, and a press-cutting agency scanned the British press on his behalf.

Oudemans had hoped to publish a sequel, bringing his book on the sea-serpent up to date, but his acarology kept him too busy. When the Loch Ness affair broke in 1933 he wrote several articles in Dutch and a leaflet in English to prove that the monster was a specimen of *Megophias megophias*. He was now old and bald, and his beard was white, but his eyes were keen behind the *pince-nez*, and he was excited at the prospect of his problem at last being solved. But when years went by and nobody made any proper attempt to study the creature, let alone capture it, he realized that his dream would never come true and that, while the zoologists made no attempt to catch it, the newspapers and their journalists were attempting to do so in a way that would make a shy animal even shyer. 'Consequently, like so many of its predecessors, it will one day die in the loch, sink to the bottom and be irretrievably lost to science.'

The old scientist had no illusions. Nor should we. We must accept that the problem of the sea-serpent is most unlikely to be finally settled except by an accidental stroke of luck, such as a specimen being washed up. Even then we shall have only one solution, and it is clear that the problem has several.

Meanwhile the zoologist can only try to reconstruct the probable anatomy, physiology, habits and biotope of the animals upon which the legend is based—as Oudemans tried to do. If one day we have the means of catching a sea-serpent, we shall not only know where to look for it, but also what we are trying to catch. And you don't use the same kind of tackle to catch a squid and a shark, a tunny and an eel, a turtle and a crocodile, a seal and a whale.

Antoon Cornelis Oudemans died on 14 January 1943 at Arnhem at the age of eighty-five. Four days before he died he was working on the fourth and last part of his great work on acarology. He left all his files on the sea-serpent to the Netherlands Society of Zoology.

In May 1959 I went to examine and microfilm these priceless archives in the lovely town of Gouda where they had been put at my disposal. I shall never forget my feelings at receiving the legacy of Dr Oudemans, the fruit of his lifetime of work. In a great grey case were nine splendid boxes of archives, much handled by loving hands: the first two concerned the sea-serpent, the other seven the Loch Ness monster. There had originally been ten, but the first one contained reports that had already been published in *The Great Sea-Serpent* (see Plate 48).

In these numbered boxes was an incredible wealth of magazine articles, press-cuttings, letters from witnesses and other correspondents, all arranged chronologically, and mostly copied out in Oudemans's neat and regular hand into slim exercise books. Many documents had his own marginal notes in elegant Dutch, slightly limping English or in quite farcical French. Thus I could follow what he thought and felt, and as I read his comments, his exact instructions for finding one's way in his archives, and his suggestions for discovering reports he had not been able to run to earth, I felt that he wanted someone to carry on his task and that he was enjoying my pleasure and amazement. And I was reminded of Baudelaire's poem *l'Invitation au Voyage* in which he sings of the beauties of Holland:

Là, tout n'est qu'ordre et beauté,
Luxe, calme et volupté.

11

Taken Seriously at Last

(The Great International Era, 1892-1914)

I am not an Athenian nor a Greek, but a citizen of the world.
SOCRATES

A FEW days after leaving Cape Town for Southampton the *Rathmines* was sailing through an oily sea when strange things began to happen. Fortunately there were three journalists on board, Litchfield A. Keller of Dayton, Ohio, Zuyland the half-Dutch editor of a South African newspaper and an Englishman who has concealed his name but revealed this story.

Suddenly the sea rose up in a black hill, a tidal wave probably caused by some volcanic eruption on the sea-bed. Then it turned to bitter cold and thick fog. It seemed as if the icy water from the deep had been thrust to the surface and made the tropic air condense in mist.

In the midst of this nightmarish scene the crew suddenly saw a horrible face, hanging as if in mid-air, only 6 or 7 feet from the port bulwark.

> The mouth was open, revealing a ridiculously tiny tongue—as absurd as the tongue of an elephant; there were tense wrinkles of white skin at the angles of the drawn lips, white feelers like those of a barbel sprung from the lower jaw, and there was no sign of teeth within the mouth. But the horror of the face lay in the eyes, for those were sightless—white, in sockets as white as scraped bone, and blind.

When the weather cleared they saw that this face was on the end of a huge sea-monster's long neck. It seemed to be in its death-throe, mortally wounded by the eruption in the deep, and writhed in coils ons the surface. Its terrible cries attracted another one, its mate no doubt, and, when it died and sank, the second followed it with a roar of despair.

Two of the journalists at once began to write detailed reports of what they had seen. But the Englishman did not bother to do so. No one, he said, would believe them. The South African agreed and tore up his report. But Keller did not, only to find that no one in England would have it, and in America he could only publish it by pretending it was fiction.

> For Truth [as the Englishman remarked] is a naked lady, and if by accident she is drawn up from the bottom of the sea, it behoves a gentleman either to give her a print petticoat or to turn his face to the wall and vow that he did not see.

Here, as the reader will doubtless have realized, I have done just the opposite and presented a fiction as if it were naked truth, though the print petticoat of Rudyard Kipling's literary fabrication in his tale, 'A Matter of Fact', is all too conspicuous. And I have done so not just as a jest at the reader's expense, but because this tale sums up better than anything else the general attitude of incredulity in 1893, the year after Oudemans's book came out, as we shall see from other evidence not taken from works of fiction.

On 23 September 1892, Gabriel Halvorsen Nordmark, a Norwegian peasant, was working with four other people in a field on the edge of the Suldal when they saw something drifting towards them a little way beyond Digernæs, but it made a wash almost as big as a steamer's. Nothing appeared out of the water until it was 200 Norwegian ells (about 150 yards) away, when it appeared black and smooth, without visible fins or tail, looking like a capsized boat upside down. The body, which was visible for about five minutes, seemed to be 8 to 9 ells (18 to 20 feet) long. But its wash was so great that waves went on breaking on the shore and seemed to show that it must really be much bigger.

You may feel that none of this, which was reported in *Bergens Tidende* of 14 October under the heading 'Sœ-Ormen', need have anything to do with the sea-serpent. Might it not have been a known cetacean? Yet there must have been something out of the ordinary, features perhaps that were not reported in the press, for, on 7 October at the express request of the Stavanger Museum, Nordmark and one of his relations, who was also present, solemnly swore to the truth of their account before the High Court at Suldal. As in Pontoppidan's day, witnesses had to make oath of their evidence on the Bible.

A few days later a less ordinary spectacle appeared before the astonished eyes of some Scottish fishermen at Broughty Ferry on the Tay estuary near Dundee. Thomas Gall and four of his men who were on deck on the *Catherine* saw something like a snake's tail writhing for a moment 30 yards away. It was a slaty blue, lightening to white at the tip. After it had disappeared a big round blackish-brown head appeared for a minute only 10 yards away. The whole animal must have been 40 feet long—a modest enough length. Indeed there is nothing fantastic about any of the story, nor was it the first such monster to be seen in Scottish waters. But this did not prevent the local people from disbelieving it and blaming the strength of the whisky.

Soon afterwards another much more spectacular one was said to have been seen by the officers and all the crew of the *Angola* in the Gulf of Guinea. For a good ten minutes they watched the animal about a mile away undulating along at 6 to 7 knots off the Nigerian coast between Bey Beach and Lagos. Its thickness is not mentioned, but its length was reckoned at about 200 feet. At one moment it raised its huge head above the waves and seemed to stare at the ship with terrible green eyes. The sailors were so struck by this sight that they signed a joint report about it. Nevertheless, as the *Glasgow Weekly* of 29 October remarks, 'As is usual in cases of this kind, the signatories have been subject to a great deal of ridicule.' And there may be good excuse for ridiculing people who can see terrible green eyes a mile away.

The incredulity of the public would not be shaken by oaths before God, local witnesses seeing the sea-serpent near at hand, or a mass of joint witnesses. They needed more than all this.

When Sir William Flower, Director of the Natural History Museum, was questioned by a *Daily Graphic* journalist in January 1893 as a more or less official spokesman for science, he replied that the sea-serpent was not impossible *a priori* (for nothing is impossible so great is our ignorance), but each year that went by without the least tangible evidence being found of its existence made it more and more improbable. 'Bring me a scale,' he said, 'or a tooth, bring me some evidence of him, and I will try to say what he is and whether he is "possible" or not.'

But would even such concrete evidence have convinced the hardened sceptics? At this very time a Scottish doctor, W. M. Russell, wrote to *The Times* about some alleged sea-serpent scales:

> In 1851 I happened to be on a visit to the house of Mrs. M'Iver (mother of Mr. Evandu M'Iver, of Scourie, who is still living, the respected factor of the Duke of Sutherland at Loch Inver), and I not only heard from her a detailed account of the recent appearance of a great sea-serpent in the little bay of Greiss, opposite her residence, but I actually became the possessor of a number of scales about the size and shape of a scallop shell, which were found on the reef of rock in the bays whereon the monster had comforted itself by scratching its head. Mrs. M'Iver had not merely heard of the strange creature; she had seen it taking a leisurely swim along the beach, to the great alarm of the fish, shoals of which leaped out of the water in front of it; and the venerable lady, whose words would be received with perfect faith by any one who knew her, said that she had watched the sea-serpent making for the reef, when the fishermen belonging to the cottages close at hand,

> having recovered their presence of mind, fired upon and apparently wounded it, and that she had seen it thrust its head and some eight or ten feet of its body up on the rocks, where it rested for some time till the shore boats approached, whereupon it slid into the water and disappeared seawards, leaving a long wake or furrow behind it. The fishermen found the scales of which I speak on the rocks, and gave some of them to Mrs. M'Iver. Many years afterwards, in conversation with Sir Richard Owen at East Sheen, I happened to mention the circumstance. He asked if I could let him see the scales. On looking for them next day in the place in my collection of 'curios' where they ought to have been, I was crestfallen at the discovery that my *pièces justificatives* had gone, for Sir Richard, then Professor Owen, was evidently incredulous, and I was, and am, a believer. In arguing the matter with him, I remarked that 'I had seen sea snakes 5 ft. or 6 ft. long, and that there was no reason to suppose there might not be snakes 50 ft. or 60 ft. long.' Sir Richard replied—'Well, well, if you told me you had seen men 7 ft. or 8 ft. high I would believe you, but I fear I could not accept a statement from you that you had seen men 70 ft. or 80 ft. in height.' Even the scales would not have convinced him.

Dr Russell's letter must, of course, be treated with reserve. There is no proof that the scales found on the reef had been left there by the wounded monster. It would have had to scratch itself remarkably hard to make the scales come off, unless they had already been loosened by the shots fired at it. In any case fish-scales—or even shells washed up by the tide—could have been lying on the rocks before ever the sea-serpent arrived.

It is also true that Dr Russell's argument that there could be snakes 50 or 60 feet long because he had seen ones a tenth of that length is quite unsound, and Owen's reply is perfectly just.

All the same, I don't think we can doubt Russell's honesty when he risked his reputation—for that is what it comes to—in disagreeing with Professor Owen. There is no doubt that one can lose the most precious material evidence—just because one has put it away too carefully.[1] And Russell certainly deserves a better reply than that which appeared in *The Times* from a witty correspondent signing himself *Scotus*.

> I have much pleasure in corroborating the statements of Dr. W. H. Russell concerning the sea serpent, and at the same time explaining why nothing has been seen of that interesting monster for many years. Fifteen years ago I assisted at the killing of him in the harbour of Oban, and published an account of the matter in a Glasgow newspaper,[2] giving due acknowledgment to the exertions of the leading citizens of Oban, who doubtless remember the occurrence very well. It was beyond question the same sea serpent that Dr. Russell saw a quarter of a century

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[1] Dr Maurice Burton has told in *Animal Legends* how he never managed to find a photograph he had taken of a toad's quite exceptional and extraordinary behaviour, which had fortunately also been photographed by someone else.

[2] *Glasgow Evening News*, 28 April 1877.

> earlier. For, in the first place, no one has ever spoken of sea serpents in the plural,[1] and, in the second, there is no authentic account of the appearance of the sea serpent since I and others with infinite trouble knocked the life out of his sixty-odd feet of convolutions in Oban harbour.[2] But still more conclusive is the fact that when killed the sea serpent had no scales. For twenty-five years or more he had been 'comforting himself' by rubbing them off against the rocks, and it was possibly owing to his unnatural denudation that we overcame him at all.
>
> One can do nothing with scientific people like the late Sir Richard Owen. They are always ready to choke you off with some absurd argument like that about men seventy or eighty feet high—as if there could be any analogy between a man and a sea serpent. But students of the occult will bear me out when I say that Dr. Russell's scales probably vanished at the moment of the monster's death, the correspondence between him and his scales being indissoluble. The loss of these evidences is to be regretted, and yet it is doubtful, as Dr. Russell hints, whether even the scales would have convinced Sir Richard Owen. The whole body might have proved awkward, but, though undoubtedly as dead as a herring and carefully moored beyond the reach of the tide, the body too vanished during the night. The whole story may, however, be read by those who care to consult the files of the *Glasgow Evening News*. Its minute circumstantiality will leave no doubt in the mind of any unprejudiced reader.

I do not think we need have much doubt which to believe, a doctor signing his own name and reporting the testimony of a known and respectable witness, or a pseudonymous wag claiming the credit for the Oban hoax.[3]

Incidentally I am sure that if the scales had really come from the sea-serpent they would have convinced Sir Richard Owen of its existence, for, obstinate though he was, he was an incomparable anatomist. At least he could have determined whether they were recent or not. On the other hand, I am equally sure that if Dr Russell had said he had seen the monster himself Sir Richard would not have believed him.

Owen scornfully rejected all reports of sea-serpents because they had not been made by qualified persons. But whose qualifications would he accept? A zoologist's? Or must he be an expert in large sea-animals? Personally I would prefer a seaman with a practical interest in sea-fauna to a zoologist specializing in butterflies or tapeworms. All the same we must give great credit to witnesses with scientific training. Even if they cannot identify what they see, they are less likely to be taken in by an illusion, and their good faith is almost certain.

In 1893, a year after Owen died, Dr Farquhar Matheson, a London doctor, who was no expert zoologist but must have known his anatomy, saw a long-necked sea-serpent when he was on a boat trip with his wife in the Kyle of Lochalsh:

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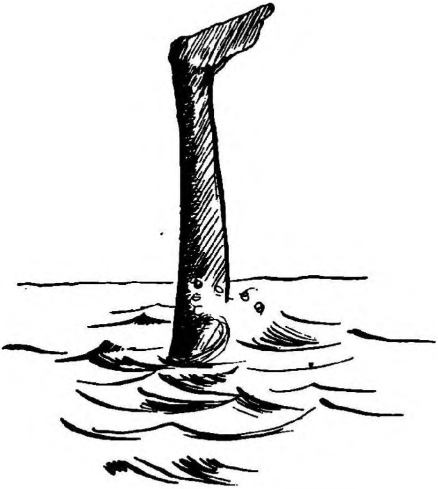
[1] Untrue, I have already quoted six instances of sea-serpents seen together.

[2] Untrue, I have found more than sixty reports during this time.

[3] I have not bothered to mention this in its place because it fooled nobody at the time and much amused Dr Oudemans, who called it a 'splendid hoax'

> It was a beautiful day, clear as possible, the sun shining brightly, and without clouds. The time was between one and two.
>
> Our sail was up and we were going gaily along, when suddenly I saw something rise out of the Loch in front of us—a long, straight, neck-like thing as tall as my mast. I could not think what it was at first. I fancied it might be something on land, and directed my wife's attention to it. I said, 'Do you see that?' She said she did, and asked what it could be, and was rather scared. It was then 200 yards away, and was moving towards us.



78. The Lochalsh sea-serpent, 1893, after Dr Farquhar Matheson

> Then it began to draw its neck down, and I saw clearly that it was a large sea-monster—of the saurian type, I should think. It was brown in colour, shining, and with a sort of ruffle at the junction of the head and neck. I can think of nothing to which to compare it so well as the head and neck of the giraffe, only the neck was much longer, and the head was not set upon the neck like that of a giraffe; that is, it was not so much at right angles to it as a continuation of it in the same line. It moved its head from side to side, and I saw the reflection of the light from its wet skin.

The animal appeared every two or three minutes, remaining visible for a couple of minutes when it did so. Dr Matheson tried to follow it for about a mile, but in the end it outdistanced him.

> ... I saw no body—only a ripple of water where the line of the body should be. I should judge, however, that there must have been a large base of body to support such a neck. It was not a sea-serpent, but a much larger and more substantial beast—something of the nature of a gigantic lizard, I should think. An eel could not lift up its body like that, nor could a snake.

Yet I doubt if even this could have convinced Sir Richard, had he lived. Even Dr Matheson's friends were sceptical, and, though he expressly stated that it could not be an optical illusion and gave good medical reasons for his view, his own son was to suggest, many years later, that it must have been a whirlwind!

In 1905 it almost seemed as Kipling were himself going to take the part of the English journalist in 'A Matter of Fact' in good earnest. At all events he was coming home from the Cape on the *Armadale Castle* when the ship struck and almost decapitated a sea-monster about 60 feet long. Captain Robinson slowed down to free the poor brute, remarking as it sank that he should have hoisted it on board with the steam-winch, because nobody would have believed it was so big. The creature was not a sea-serpent but that rare fish which so frequently collides with ships, the whale-shark.

In fact the situation in Kipling's tale is commonplace: the man who sees a sea-serpent and is mocked so much that he ends by keeping quiet about it. The classic case of this is Captain Cringle of the Natal Line steamer *Umfuli* who watched a long-necked sea-serpent for half an hour in December 1893.

When R. T. Gould wrote to him thirty-five years later for further information about it, he replied, 'I have suffered so much ridicule on this that I must decline to have anything more to do with it.' But the author convinced him that he was only trying to put on record the truth of the matter, and the old sea-dog relented.

On 4 December 1893 the *Umfuli* was steaming southwards through a calm sea towards the Cape of Good Hope and was in approximately latitude 21° 41′ N. longitude 17° 30′ W., off Rio de Oro, when the event occurred which the log describes thus:

> 5.30. Sighted and passed about 500 yards from ship a Monster Fish of the Serpent shape, about 80 ft. long with slimy skin and short fins at about 20 feet apart on the back[1] and in cir. about the dimension of a full sized whale. I distinctly saw the fish's mouth open & shut with my glasses. The jaw appeared to me about 7 feet long with large teeth. In shape it was just like a Conger Eel.
>
> C. A. W. Powell, Mate.

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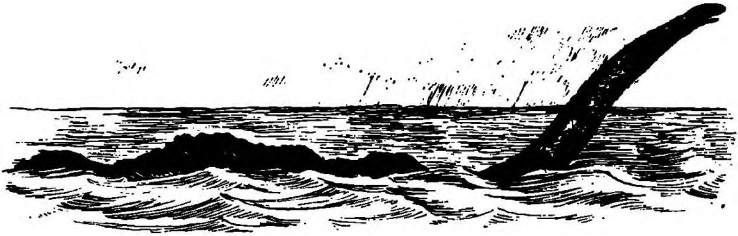
[1] These fins are not visible on Captain Cringle's sketch, but there is a back with three humps, the middle one much the largest. The other two, apparently covered with hair, may have been what the mate described as 'short fins'.

Captain Cringle's own account, almost equally dry in style, helps us to complete the picture:

> When we first saw it, I estimated that it would be about 400 yards away.
>
> It was rushing through the water at great speed, and was throwing water from its breast as a vessel throws water from her bows. I saw full 15 ft. of its head and neck on three several occasions ... The body was all the time visible ... The base, or body, from which the neck sprang, was much thicker than the neck itself, and I should not, therefore, call it a serpent. Had it been breezy enough to ruffle the water, or hazy, I should have had some doubt about the creature; but the sea being so perfectly smooth, I had not the slightest doubt in my mind as to its being a sea-monster ... this thing, whatever it was, was in sight for over half an hour. In fact, we did not lose sight of it until darkness came on.



79. The *Umfuli* sea-serpent, 1893, after Captain Cringle

Even though Dr Oudemans's book had just come out, Captain Cringle suffered much from armchair experts with their theories of what he had 'really seen':

> I had been told that it was a string of porpoises, that it was an island of sea-weed, and I do not know what besides. But if an island of sea-weed can travel at the rate of fourteen knots, or if a string of porpoises can stand 15 ft. out of the water, then I give in, and confess myself deceived. Such, however, could not be.

On the other hand the sceptics sometimes found newspaper items well calculated to nourish their incredulity. The Sumatra *Deli Courant* of 17 February 1897 tells of a sea-serpent seen by the captain and helmsman of the steamer *Assama*, who said that it was as long as their ship and about 18 feet thick. Its body was covered with huge green scales and decorated with various fins, and it raised its neck in an arc 150 feet above the waves!

Oudemans's great work affected opinion only gradually. Throughout the great era which we shall somewhat arbitrarily end with the outbreak of the Great War, public incredulity decreased, and the zoologists took a keener interest in the problem.

In the sea-serpent's old haunts of New England and Norway, the problem had withdrawn into shadow. I have found reports of only eight sightings from these waters on both sides of the Atlantic. Perhaps the witnesses had grown tired of mockery and held their peace. But the British went on seeing sea-serpents on the waves they still ruled, and went on having the courage to report the fact. Those great seamen, the Dutch, perhaps influenced by Oudemans's book, began to put in reports, and the French also took a hand.

In this confusing problem where ideas are often affected by national character, it simplifies matters to consider events according to the countries concerned, as I have to some extent already done, and only attempt to correlate them all afterwards. We have come to a relatively short but important French Period from 1897 to 1911. Sea-serpents had already been seen off French coasts—off Ushant in 1861 and 100 miles west of Brest in 1879—but from British ships. And in the 1890s one was seen again off the Atlantic coast of France, again by British witnesses. The story was told long afterwards in 1933 by an English Jesuit, Father Edward Rockliff, who had then been fourteen years old and was coming back from Bordeaux with his father on Moss & Co. steamer. It was a fine day when they saw a great splashing in the water which the captain thought at first was made by a whale. But they soon saw it was not.

> A long neck, about 1½ ft. in diameter, had raised itself high out of the water, almost perpendicularly. It then fell flat on the surface like a log, making a great splash. Fortunately the operation was repeated at regular intervals as the 'monster' made off towards the coast of France ... The impression was that the 'monster' was being pursued by something under the surface.
>
> This much I can vouch for: I was perhaps too young to observe accurately the dimensions. My elders said there were some 15 ft. to 20 ft. of the animal erect above the water. The colour was that of the back of a porpoise. The head was no larger than the trunk. There was no indication of a tail, or of how much was left submerged.

But despite this spectacular appearance almost under their noses, the French did not take any notice until similar reports started coming from their colony in Indo-China.

On 5 March 1898 the *Courier d'Haiphong* mentions for the first time the 'encounter with one or more hitherto unknown animals—veritable sea-monsters—which the gunboat *Avalanche* several times made in the bay of Faî-tsi-long'. This is on the north of Along Bay on the coast of Tongking, and is dotted with islets separated by narrow channels of calm tepid water in which marine life pullulates—a perfect place for a hungry sea-monster to browse.

Lieutenant Lagrésille, commander of the *Avalanche*, tells us how:

> In the month of July last [1897] the *Avalanche* saw for the first time, off Along Bay,

> two animals of weird shape and large dimensions; their length was reckoned at about 65 feet and their diameter at 6 to 10 feet. The feature of these animals was that their body was not rigid like that of the known cetaceans, but made undulatory movements similar to a snake's, but in a vertical direction. A revolving gun was loaded and fired at 600 yards, at slightly too short range. They immediately dived, breathing loudly and leaving a wash on the surface like breakers. They did not reappear, but we thought we saw their heads, which we judged to be of small dimensions.[1]
>
> On 15 February of this year [1898], when crossing the Bay of Faî-tsi-long, I saw similar animals again. I at once gave chase and had the revolving guns loaded. Several shots were fired at one of them, at ranges of between 300 and 400 yards, and at least two shots reached them without seeming to do them the least harm, the shells bursting on the surface. I also tried to reach them with the bow of the ship, but their speed was greater than that of the *Avalanche*. Each time, however, that this animal came into shallow water it turned back, which enabled me to gain upon it and confirm its great size. It frequently emerged, and always one noticed its undulatory movements. Each emergence was preceded by a jet of water, or rather of water vapour made by a loud breath, unlike the ordinary Blowers which inhale water and blow it out to a certain height.[2]
>
> The colour of the animal was grey with several black fins. Its trail was easily followed by the release of its breath which formed circles of 4 to 5 yards in diameter of the surface of the sea, which was then perfectly calm.[3] At one moment I thought I had reached it. The chase went on without success for an hour and a half and had to be abandoned as night was falling.[4]

A week later, on 25 February 1898, Lagrésille was invited to a reception given by Admiral Gigault de la Bédollière in honour of Paul Doumer, then Governor-General of Indo-China and later President of France, and his tale of his encounter with the 'Great Serpent' was greeted by some of his brother officers with very old-fashioned looks. But he soon had his revenge. The next day he invited Commander Joannet and nine officers from the *Bayard* on board his own ship to visit the Faî-tsi-long archipelago. They were in the middle of a festive luncheon, when one of the crew told them that two sea-serpents were in sight. Everyone rushed on deck, though some of the guests thought that it was a joke laid on for their benefit.

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[1] This was not in fact the very first time that French sailors saw such animals in these waters. Inquiries made by the newspaper *Ouest-Éclair* in 1922 revealed that a coastguard called Carolin Hesny had been on the gunboat *La Mutine* in 1893 and had seen a big long black animal in Along Bay 'swimming with vertical movements'.

A naval officer wrote to Count Gautron in 1905: 'One of my old commanders, Lieutenant Victor G. . . , since dead, told me one evening, on the bridge of the *Héron* in 1896, that he had once seen, on the Tonkging coast in the Bay of Along, three of these animals playing in the water. He approached them and could make them out clearly. They resembled snakes and must have been at least 60 feet long.'

[2] Professor Racovitza noted: 'M. Lagrésille is in error in thinking the Cetacea breathe in water and blow it out through the blowhole; it is air they take into their lungs, and air charged with vapour that they expel ... M. Lagrésille's words clearly indicate that these animals' breath is different from that of the Cetacea. This must be so, and my explanation is that *Megophias* must breathe through the nostrils like the seals, and not through a blowhole like the Cetacea.'

[3] Professor Racovitza noted: 'If I understand this, it means that, the animal being completely immersed, one saw big bubbles of air bursting on the surface. I have often observed this with Antarctic seals.'

[4] This was confirmed in every detail by the two gunlayers, Baron and Le Dean, in 1922.

There they saw two strange beasts swimming a few hundred yards from the ship.

> We gave chase to one of them for thirty-five minutes [reported Lagrésille], and at one particular moment we saw it clearly about 200 yards on the beam, floating horizontally. It had three undulations without a break, which ended with the appearance of its head, which much resembled a seal's, but almost double the size. We could not see whether it had a neck, joining it to the body, of relatively much greater dimensions: this was the only time we saw the undulations appear without a break. Until then we might have thought that what we took for them were humps appearing in succession; but from the testimony of all the witnesses doubt is no longer permissible, for, before they appeared, we saw the animal emerging by the same amount all along its length. Two of the officers present possessed a camera: they ought to have been able to use it then, but they were so surprised by what they saw, that when they thought of aiming their cameras the animal dived, only to appear much further away in much less clear conditions unfavourable to taking a photograph.
>
> To sum up, the animals seen by the *Avalanche* are not known. Their length is about 65 feet (minimum), their colour grey and black, their head resembles that of a seal, and their body is subject to undulations that are sometimes very marked: finally their back is covered with a sort of saw-teeth[1] which, removes any resemblance to known cetaceans; like the latter they reveal their presence by blowing noisily, but they do not spout a jet of inhaled water like the whales; it is, rather, their violent respiration which causes a sort of vaporization of water which is ejected in drops and not in a jet. Undoubtedly these animals, known and feared by the Annamites, must have provided the idea of the Dragon, which modified and amplified by legend, has been, if I may so term it, *heraldized* into the national emblem.

Back on board the *Bayard*, Joannet told Admiral de la Bédollière what he had seen, and the admiral at once wrote and apologized to Lagrésille for having doubted his word. He even cabled the Governor-General that 'ten officers including the commander of the *Bayard* were on board the *Avalanche* and saw two specimens of the animal we made such fun of'. He decided to make a concerted attack with gunboats and steam-launches to drive one of the animals into a pool where it would be stranded at low water or could be

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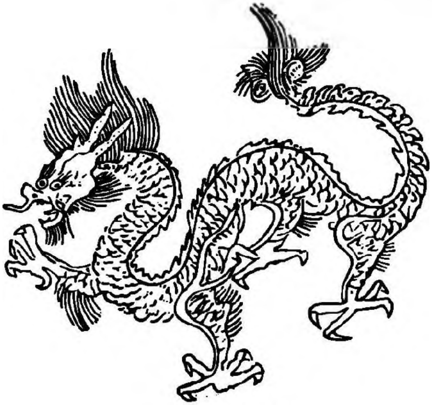
[1] Professor Racovitza maintained that this crest was just the mane noticed on various sea-serpents, which, when wet and sticking together in separate locks, looked like this. But the mane is said to be on the back of the head and to hang down the neck, while this crest is on the back, so this is hardly likely.



80. Chinese dragon

overpowered. But the crisis over Kiaochow, the factory in Kwangtung which the French hoped to seize, prevented him from doing so.

Meanwhile the animal had been seen again in Along Bay from the old ironclad *Vauban* (Vice-Admiral de la Bonninière de Beaumont and Captain Boutet), or so a merchant captain, Jean-Baptiste A... of Ploubazlanec said during the *Ouest-Éclair* 1922 inquiry. He was then in the Marines and was on guard at the port gangway of the *Vauban* on 11 July 1898.

> I was looking at the sea at the bottom of the ladder, when my attention was attracted by a strange beast which passed at about ten feet from the bottom of the gang-ladder making undulations like those of a snake and in the fore-and-aft direction of the boat.
>
> This animal measured about 35 to 40 feet long and seemed to be about 16 to 20 inches in diameter at the middle of its body. It bore scales of the size of a turtle's; the neck was much thinner than the body, and the proportion of the head to the body was as in a snake; the tail ended in a point. The eyes appeared to be a little higher in the head than in an ordinary snake; two very conspicuous holes were to be seen a little way back on the nose. The colour of the animal seemed to be greenish grey, but no doubt this was due to the colour of the sea and the reflection of the sky. It was about 5 to 6 feet below the surface.

It was some years before these events made any noise in French scientific circles. They naturally interested Professor Racovitza, a scientist already sympathetic to Oudemans's views. He was far from gullible and most sceptical about seamen's taller tales, but he said:

> Zoologists are so used to being distrustful that I think they have gone a little too far. There are two categories to be distinguished in this unofficial zoology. There are those which are purely and simply the result of their inventor's imagination;

> and there are others which are the result of faulty observations of real animals. It is not difficult to tell the first from the second, and with a little practice one can do so almost with certainty.

Oudemans had set about this task, and according to Racovitza 'it follows from this study that the existence of *Megophias* cannot be in doubt'. Moreover, 'the ostracism which the animal he studied has hitherto suffered, so that it is not even mentioned in zoological textbooks, must cease'.

With this conviction, he went as naturalist on the *Belgica* expedition to the Antarctic in 1898, hoping to meet with a sea-serpent. He had no luck.

> I will simply mention [he adds] that at Puntas Arenas several people told me of a gigantic animal which appeared from time to time at Cape de las Virgenes at the entrance to the Straits of Magellan; but, as I was not able to see any eye-witness, I can take no responsibility for these tales.

It was not until Racovitza returned to France two or three years later, after some appalling misadventures and considerable suffering in the Antarctic, that he came upon the *Courier d'Haiphong* and Lagrésille's account, which he said was 'excellent confirmation' of Oudemans's study, 'and at the same time one of the most detailed descriptions we have'.

Racovitza could get no further information from Lagrésille, who said, 'I fear that now I might be influenced by imagination.' But he obtained a confirmatory account from Lieutenant de Ligny:

> We saw it only once from close to, and there can be no doubt about it. The appearance of the beast is as follows: a round black fat body like that of a big whale, then a *sinuous* part, not emerging completely, but seeming to join the body to the head. The latter fairly large, continuing the neck, of rather oval shape, and with two gaping holes. Finally a set of dorsal spine-like saw-teeth.

Professor Racovitza put all this, together with his full account of Oudemans's work and comments thereon, in a long communication to the Zoological Society of France, ending with some practical advice:

> *Megophias*, like all the sea-mammals except the Right Whale, can only remain on the surface by swimming. Once dead it must sink. It is thus quite useless to fire at the sea-serpent, because even if one killed it stone dead, one could not recover the body!

Far better, he said, to try to get as close as possible and then to harpoon it. If this was impossible one should photograph it or make a good sketch, noting the shape of the head, the appearance of the skin, whether there was a mane or not, a crest or an aileron, the shape of the limbs, the proportion between the parts of the body, whether it breathes through nostrils or blowhole.

If killed, it should be photographed or drawn, position of teats and shape of sexual organs noted, the limbs carefully measured. As it was clearly too large to be preserved whole one should at least keep the head, a flipper, several vertebrae from different parts of the body, a piece of skin, and, if possible, certain internal organs.

This communication was warmly welcomed by the zoologists present, who took the intelligent initiative (much to the credit of French science) of printing extra offprints for distribution in Indo-China, especially to the Navy.

The animal in question returned the compliment by appearing again in French colonial waters, off Annam 350 miles south of Along Bay.

René Labruyère was told of it by the mate of the Messageries Cantonaises twin-screw *Charles-Hardouin*, whose name he does not give, though it should be discoverable. The ship was on passage from Nantes to Hongkong in November and December of 1903 when a typhoon forced her to shelter in Tourane Bay. The helmsman pointed out a dark mass, very close by, to the mate:

> 15 to 20 yards from the ship a double mass appeared, the length of each part must have been about 25 feet and the distance between them about 18. The bulk of each of these coils could be compared to that of a big half-hogshead barrel: a spiky crest gave the coils a quite singular appearance.
>
> It all undulated like a snake in motion, and its speed was markedly greater than that of the ship, which was then doing 9 knots so far as I recall. The colour was 'dirty black'. A few seconds later the animal dived horizontally, churning the water violently.

When he arrived in Hongkong he learnt that similar animals had been seen in Along Bay, and concluded, as Lagrésille had done:

> What I have heard during a long period on the south China coast leads me to suppose that they are amphibious [i.e. air-breathing] and that their appearances were once fairly frequent on the coasts of the China Sea, and I think that the *Taiwan* embroidered on Imperial and Annamite flags is just a stylized version of this animal.

On 12 February 1904 Lieutenant Péron, commanding the *Château-Renault* also saw a sea-serpent in Along Bay—which means Dragon Bay, for reasons that were now very clear to the Navy.

Péron was making soundings that morning from a steam-launch in the west of Crapaud (Toad) Roads, with an old native fisherman pointing out the submerged rocks for him, when he was surprised to hear the sailor in the bow cry out: 'A rock dead ahead!'

> I stood up and stopped the engines, then I saw, not very far ahead, a grey mass shaped like a turtle's back, which we reckoned to be more than 12 feet across; almost at once it disappeared. I supposed it was a sperm-whale. The launch still

> having way on her, we came near where it had surfaced, and I saw that there was a big patch of oil on the water.
>
> I still remained stopped, and am glad I did; soon afterwards we heard the water churning to the west, and we saw, almost touching the nearby shore a little south of Chandelier [Candlestick] Rock, two huge coils which I supposed must belong to a monstrous eel at least 3 feet in diameter. I saw to my great surprise that the skin of this beast and the rocks on the shore were the same colour; dark grey with patches of dirty yellow. From the distance that I was the skin seemed smooth and even. It appeared briefly, the two coils disappeared with a repetition of the noise we had already heard.
>
> Once again we looked all around us; there was not a breath of wind, the surface of the water was very smooth; in the end we saw ripples rather far away in the direction of the Crapaud. We could not see clearly, for we were too low down. All the same I got the impression that the animal was just awash and moving by vertical undulations.

Péron ordered full steam ahead, but the animal was too quick for him to catch it, and must have been doing 9 knots. He also noted that 'from time to time a jet of water came out of the head' and that 'during the chase, I again saw that there were patches of oil in the animal's wake. From the undulations I reckoned its length at over 60 feet.'

Péron said that he might have forgotten about this encounter had he not met Lieutenant L'Eost, commander of the gunboat *La Decidée*, a fortnight later and found that he too had seen a similar animal in Along Bay. This officer made a very official report of it in a letter to Rear-Admiral de Jonquières:

> Sir, On the afternoon of 25 February last, when steaming out of Along Bay, *La Decidée* met, off the 'Noix' ['Nut'] Rock, a strange animal apparently of the same species as that seen in the same locality in 1897 and 1898 by Lieutenant Lagrésille on board the *Avalanche*, which observations were published in the *Bulletin de la Société Zoologique de France* (1902), which I had no knowledge of until after I made my own.
>
> I first saw the back of the animal at about 300 yards, on the port bow, in the shape of a rounded blackish mass, which I took first for a rock and then, seeing it move, for a huge turtle 12 to 16 feet in diameter.
>
> Shortly afterwards I saw this mass lengthen, and there emerged in succession, in a series of vertical undulations, all the parts of the body of an animal having the appearance of a flattened snake, which I reckoned to be about a hundred feet long and the greatest diameter 12 to 16 feet.
>
> The animal having dived, I did not observe it again, my attention being distracted by handling the ship.
>
> The observations which follow were gathered from various members of the staff and crew.
>
> The animal appeared a second time about 150 yards away and dived beneath the ship just aft of the gangway. Its back, on this second appearance, was all that

was visible at first. It was semi-circular in section, not at all like that of the cetaceans (Dr Lowitz). Its skin was black, showing patches of mottled yellow (Able Seaman Sourimant); according to Seaman Leguen, it was dark yellow and quite smooth.

The back then disappeared, leaving big ripples, and the head alone appeared near the gangway. Here are the observations of Leading Engineer Pinaud, who was in this position. All the other seamen present have confirmed every detail.

When he heard voices on the bridge he looked out and saw waves like the sea breaking or a rock awash, or like those made by a submarine diving. He turned to call his mates, and they all came and watched.

The head and neck came out of the water only 40 yards away. The head was the colour of the rocks in the bay (greyish, white mixed with yellow). It was like a turtle's; the skin seemed rough, and this roughness seemed due to scales rather than hair.

The witnesses' estimates of the widest diameter of the head vary between 15 and 30 inches; it was slightly greater than that of the neck.

The head blew two jets of water vapour. The rest of the body appeared *à fleur d'eau*. It undulated in a horizontal direction. The animal moved at a speed estimated at 8 knots.

When it was almost alongside, the head dived, and a series of vertical undulations were seen running along the body, just out of the water.

The animal at once reappeared near the ship's starboard quarter. Marine Lecoublet and Seaman Le Gall were there.

The body moved forward in vertical undulations. In its whole length there were 5 or 6 marked undulations. This length is estimated by these two witnesses as more than 30 feet. They describe a head wider at the back than the front and longer than a seal's.

The body seemed to them to be of almost the same dimensions all along its length. They compare it to a 'Blower's'.[1] This estimate, together with what seems to me much too small a figure for the length, makes me think these witnesses saw only part of the body.

The skin was smooth. Nobody saw fins. The animal did not blow at this time.

It dived again and appeared some way astern. One could now only make out long blackish body, with moving curves and jets of water vapour.

From what the witnesses at the gangway saw, the animal breathes through its nostrils rather than through the top of its head.

Nobody observed the head in detail.

It turned out that other naval units had seen the dragon of Along Bay. At the end of December 1903 several members of the crew of the cruiser *Gueydon* saw one for the first time. But when the ship returned to Along Bay in March 1904 about a hundred people on board were able to watch the monster.

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[1] *Souffleur* ('Blower') is a common name for the Bottle-nosed Dolphin (*Tursiops truncatus*), but many seamen use it for any cetacean that blows.

So it is hardly surprising that Commander E. Plessis, who served under L'Eost, wrote to me that 'in the staff of the Naval Division in Indo-China, all the officers firmly believed in its existence'.

And what did the scientists make of all this?

On 27 June 1904 Professor A. Giard, read L'Eost's report to the Academy of Sciences in Paris[1]. He told *Le Temps* which interviewed him next day, that 'the sea-serpent has emerged from legend and entered reality ... We may suppose that the sea-serpent belongs to those groups thought to be extinct, for instance the Mosasaurs or Ichthyosaurs.' The okapi had just been discovered in the Congo forests. 'Why should we not also rediscover the Mosasaur and Ichthyosaur, which, if they still exist, can only live at great depths in the sea and appear on the surface but rarely and by accident?'

The notion that an air-breathing animal should live at great depths was justly criticized by Édouard Dujardin in *La Revue des Idées*. And Giard does not seem to have chosen his saurians with much care, for the dolphin-shaped ichthyosaur had nothing in common with the sea-serpent, and the mosasaur argument was not seriously tackled until Professor Léon Vaillant, who held the chair of herpetology at the Paris Natural History Museum, did so in 1904. He said the animal the French Navy had been seeing seemed from the descriptions not be be a mammal, as Oudemans had said, but 'a reptile, very probably pythonomorphic and fairly closely related to the mosasaur which, in palaeontological terms, was a real sea-serpent'.

Of all the great reptiles suggested as prototypes of the sea-serpent, there is no doubt that the mosasaurians are among the most likely. They were the very first of the giant Mesozoic reptiles to be discovered, their bones being found in 1770 on the banks of the Meuse, whence they take their name. Some were of vast size and looked like huge lizards with flippers instead of feet. With their mouths bristling with formidable hooked teeth, even in the palate, they could dislocate their jaws deliberately, as snakes do, and thus swallow enormous prey (see Plate 55).

One feature of the mosasaurians' anatomy deserves special attention. The vertebrae, unlike those of the plesiosaurians, which are flat-ended, making the spine rather inflexible, are convex at one end and concave at the other and can thus work freely. With a series of knee-joints, as it were, from one end to the other, these great saurians must have been able to make truly

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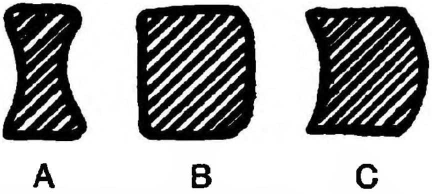
[1] Not all communications to the Academy are of equal value. A little while after this Count Gautron, a bearded dandy from Angers, presented a report on the proofs of the sea-serpent's existence, which he published as a pamphlet in 1905. In some respects it is well documented, but the original texts are often mistranslated or mistranscribed. His own contribution is the tale of a seaman called Yan about a sea-serpent seen in June 1897 from the *Albatros*, which he claims to have heard from his friend, Count Dillon. Actually it is copied, pictures and all, from the story of the *Tresco* (1903) which, as we shall see, stinks to high heaven as a hoax.



81. Longitudinal section of a vertebra of: A. ichthyosaur; B. plesiosaur; C. mosasaur

serpentine movements and propel themselves without help from their flippers. This is why they were sometimes called Pythonomorphic, or 'python-shaped' in some classifications.

The analogy with the sea-snakes' method of progression was certainly taken too far. The lengthening of the neural (or upper) processes on most of the caudal vertebrae leads us to suppose that the tail was very high and perhaps bore a crest. Some even think that a high fin of membrane ran all along the back increasing the effective area for undulating progression. This could have been a high, soft and flexible fin, as on some eels, or a scalloped crest, as on some newts and lizards. Either of these could at first sight be taken for the 'humps', 'dorsal aileron' or 'saw-toothed crest' so often seen on sea-serpents.

Moreover mosasaurians are rather more likely to have survived than plesiosaurians, for they belong to a more recently formed group. The order of Sauropterygia, to which the plesiosaurs belong, flourished from the Triassic to the Upper Cretaceous Periods, but the family of Mosasauridae does not seem to have appeared before the Cretaceous. Nor do the mosasaurs belong to a completely extinct order like the ichthyosaurs, plesiosaurs and dinosaurs. The mosasaurs are always classed in the order of Sauria with living lizards and snakes. In some recent classifications they are even included with the Varanidae (monitors), Lanthanotidae (a mysterious little lizard from Borneo) and the Helodermatidae (Gila monsters) in the superfamily of Varanoidea. In anatomy the mosasaurs are very close to the monitors and could be called monitors adapted to aquatic life. The famous Komodo dragons, which are sometimes 10 feet long, have survived thanks to their isolation on several islands in the Sunda Straits where they have never had natural rivals or enemies (see Plates 53 and 54). It is thought that the giant of the group, *Varanus priscus* of Australia, which was over 30 feet long, died out only in historic times, as a result of man's invasion of that continent. And there are persistent rumours from New Guinea of a living monster more than 20 feet long, which is by no means improbable. Why should not aquatic monitors like mosasaurs have survived in the oceans?

Hyatt Verrill has pointed out how little the ocean has altered since the beginning of the world, only decreasing in extent and varying in surface temperature. At great depths the temperature is around 0° C. and has probably always been so. Therefore creatures living at great depths in the past could still do so.

But do not aquatic reptiles always remain near the surface, not only in order to breathe and enjoy warmer water, but because they are not built for depths? Not at all. There are even strong reasons for thinking the contrary about the mosasaurians. Their quadrate bone is enormous and often forms a tympanic bone acting as a sound-box, as it does in sperm-whales, where it shows their adaptation to the fearful pressures of the depths, and these whales are known to dive more than 500 fathoms.

It is thus probable that mosasaurians must must have breath as visible as that of the big whales, for this cloud of mist is due to sudden decompression of expelled air. All of which agrees with what we know of the Along Bay dragons.

On the other hand a mosasaur could not be one of those sea-serpents with a neck like a walking-stick, for its neck is relatively short and as thick as the head and body, as in the conger.

But Professor Vaillant's theory is based on the reports of the Along Bay animal, none of which give it a very long neck. On the other hand they do say that, like the more classic types of sea-serpent, it moves by undulating up and down, a habit impossible in a reptile. The mosasaur's anatomy is even more specifically designed for side-to-side undulation than the plesiosaur's.

And, as to the scales that some witnesses saw, Charles Pérez wrote in 1904 'dermic armour was a very general characteristic of the ancient Cetacea, and we are today watching the last stages of its disappearance ... the animal of Along Bay could have scales and still be a mammal'.

If mosasaurs do survive, which would not be very surprising, it is quite a different kind of sea monster they resemble, the one like a huge crocodile with flippers or webbed feet. I have already suggested that this might be a surviving thalattosuchian. Mosasaurs are much better adapted to marine life, even at considerable depths, and would make a more likely crocodile sea-serpent. But this type of monster seems never to have been seen or even commented on by the French, and it is not surprising that they preferred Oudemans's theory of a mammal.

Whenever a country takes an interest in the problem of the sea-serpent, we find an accumulation of reports, both true and false, which ends by confusing the issue, if only because of the diversity of creatures described.

In France the repercussions of the Along Bay affair were slow in coming and very slight. Zoologists wrote on the subject, but there were few reactions from the public. Were it not for the enterprise of a provincial newspaper, *Ouest-Éclair*, in 1922, the French files on the sea-serpent would be pitifully thin. There was nothing comparable to the flood of British reports whenever the affair took a new turn. Generally speaking in France the man-in-the-street was ignorant of the facts, and incredulous or at best indifferent, while the scientists were keenly interested. In Britain it was the other way round, naturalists were generally rather hostile, while the man-in-the-street was fairly favourable.

Some, however, of the few French reports are very valuable. Here is one from a very out-of-the-way place. On 13 April 1905 Captain P. Guillou was returning from Chile on the *Rhône* and was in 52° S. latitude and 75° W. longitude before rounding the Horn, when he

> saw sticking up some twenty yards away in our wake and 5 feet above the water, the head of an animal which I cannot compare to anything but those which used to decorate the prow of Viking ships and the big junks of the Niger ... The animal seemed startled. All I saw was the head and neck which followed the undulating movements of the body, which seemed to me to be long. It made off at a considerable speed.

This is the first time a sea-serpent has been reported so far south as the tip of South America—an area, it is true, not much frequented by shipping. It is also the only one I know of. I have not found a single other report from anywhere along the west coast of South America.

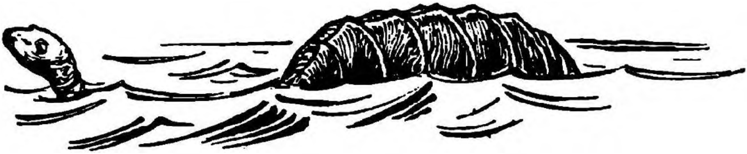
The next report is nearer home, right in the Mediterranean off the coast of Corsica. In October 1907 some Calvi fishermen saw in the gulf of Porto west of the Île de Beauté, what they first took for a string of floating objects, but which proved to be a sea-monster about 200 feet long. The terrified men made for the shore where the local people all gathered on the rocks to watch the sea-serpent disporting on the surface. During the following days the fishermen dared not go to sea and even asked the commander of the naval base at Ajaccio to send them a torpedo-boat to rid them of the monster.

The *Ouest-Éclair* inquiry elicited one of the most detailed reports we have from Along Bay. The author, a deep-sea captain from Granville, would not let them publish his name, but according to *Lloyd's Register* it was P. Merlees.

> In June 1908 I was captain of the steamer *Hanoi* belonging to A. R. Marty of Haiphong and at about 6 in the morning was about 5 miles east of the Norway islands which lie at the entrance to the Along Bay (Tongking), and I was steering to pass between these islands and the land when I saw it.
>
> I saw, some way ahead, a black mass which at first I took for a capsized boat. On approaching and examining it with binoculars, I found it had a strange shape. This resembled a framework over which sail had been tightly stretched. The ribs

were very marked. Seen from the side and from some way off it would certainly look indented, for the ridges were very sharp. I had a three-quarter view which enabled me to make a rough estimate of its size.

The colour was black; the length about 16 feet and the width about 5 feet. It was quite motionless.



82. The *Hanoi* sea-serpent, 1908, according to her captain

As I wondered what it could be I kept coming closer and clearly distinguished all its features. When I reached some thirty yards away a huge head emerged some 4 or 5 yards from what I could see, and therefore nearer to me.

Although surprised by this sudden apparition, I could observe it very well, and it was very like the head of a turtle, but longer and certainly 2 feet wide by 3 feet long; it had two big very bright black and white eyes and large nostrils. It was blackish like the rest. I could not see the jaw, the mouth being shut, but the mouth was clearly marked on the sides and of large dimensions.

The head turned to look at the ship, blew noisily without spouting water and at once dived, the rest following and making a big wash.

When I reached where the animal had been I could see nothing but the wash in the water, and that was all.

Given the dimensions of this animal it could not possibly be confused with a turtle. For one thing it certainly had no scales, of that I am sure. The skin was more like old tanned leather, and with my binoculars I could see it very well.

The head appeared for a few seconds only, and I did not look at it with my binoculars, but it was very close, perhaps 25 yards away, and what struck me most were the eyes. The turtle has only very small eyes, veiled by a membrane, and not big bright eyes like these. And so far as I know there are no turtles of this size.

From the head to the end of the visible part was a good 30 feet; so it was indeed an extraordinary animal.

From the disturbance of the water at the moment when it dived and from the part of the body that I saw, the shape of the body must be: a very long and flexible neck, indicated by the distance of the head from the visible part of the body, and by the head which turned without the middle part moving; then a much broader part in the middle, the part that I saw; and finally a fairly long tail which did not show above the surface, but was clearly marked by the disturbance of the water.

Observation was hindered by the fact that the sun was partly hidden behind small clouds and made a white reflection on the surface which prevented one from seeing to any depth.

The poor light may perhaps explain some of the differences between this and other reports of the Along Bay dragon. The projecting ribs and spine are certainly the most interesting feature here. They remind one of the parallel ridges on the leathery turtle and the basking shark, which had a stabilizing effect, except that those are longitudinal—in any case the beast is too big for a leathery turtle, and the basking shark has no neck. It is, however, hard to believe that the ridges across the spine could be taken for a jagged crest, and one cannot help wondering whether the beast's condition was normal. Sea-mammals are, for obvious reasons, usually fat, protected against the cold by a thick layer of blubber. Might not this specimen be wasted away by age or illness? It is hardly likely. The explanation I shall be putting forward is that this emaciated appearance may be due to transverse bands of armour, as on the armadillos.

We do not know much about the sea-serpent that Captain Le Lièvre, a well-known sailor who rounded the Horn twenty-two times in his career, saw as a young man in August 1910. It was twenty-five miles from the Mozambique Channel and swam breaking the surface and opening a huge mouth. He said that it was more than 200 feet long and as thick as a three-hogshead barrel. No doubt rather exaggerated.

During the summer of 1911 a sea-serpent of more acceptable size was seen in France itself off Saint-Quay-Portrieux in Saint-Brieux Bay by François Gélard and his two sisters. This is what he told Dr Georges Petit in 1934:

> We were just finishing lunch, and it was about one o'clock in the afternoon, when my sister, Madame Ollivier, cried, 'Look, there's a dog swimming!' Near where my sister pointed my attention was first drawn to a small sailing yacht, then I saw, between the boat and the shore, nearer to the coast, the animal she was pointing at, and which I assumed, without looking closely, was a dog belonging to some member of the crew. However, it came closer to us, and I could not help being surprised both at the speed at which it swam and the length of the neck it raised above the waves.
>
> I looked at this strange swimmer with some ship's binoculars I had, and I saw at once that it had nothing in common with a dog. Nor was there anything else I could compare it with, and the only thing I could think of then that was at all like what I could see of its body, i.e. its head and neck, was the head and neck of a giraffe.
>
> Its course, however, had brought it facing me, and I could then make out another strange peculiarity of its structure. This was a sort of black dome or hump, which appeared some distance behind its neck. My complete ignorance about the shape of the rest of the body under the water, and my inclination to assume that it was like that of a huge snake, led me to think that this spherical hump was just a coil of its body appearing. But I was surprised to see that this hump seemed fixed in the wake like that of a ship's prow, which the animal's neck left, and that it followed its every movement.

> The rest of the body was entirely under water, but not very deep and marked by a great disturbance on the surface. At a distance from the head which seemed to me to be at least 30 feet, a great churning of the water marked the position of its caudal fin, which must have been the chief means of propulsion.

The animal swam so fast that when it made for a spit of rocks the watchers thought for a moment that it was going to leap them in one bound, but a hundred yards from them it turned suddenly and headed offshore[1]. A little later another identical animal joined it, and the two swam away from the welcoming shores of France.[1]

During this period there are very few American reports. The days of many-humped sea-serpents being described soberly and with unanimity along the New England coast are over. From now on the American sea-serpents are often odd, if not frankly fantastic.

Thus we can hardly take seriously the sea-monster the lighthouse-keeper at Stradford and his family saw in 1896 in Long Island Sound. It was 200 feet long and raised a neck like a ship's funnel 20 feet above the waves, and it had, they said, a bright green handlebar moustache.

Charles Jay Seibert's account of what he saw from the steamer *Grangense*, commander Captain Spedding, when on passage from New York to Belem is much more believable, even though he did not reveal it until many years later as a result of an article in the *Saturday Evening Post* by Ivan T. Sanderson in 1947.

It was a fine morning in May 1901 when the officer of the watch suddenly pointed to the sea and cried, 'My God, look there!'

> Looking as directed [said Mr Seibert] we saw some sort of an amphibian, grayish brown in color. The forward part, which was all we could see, was similar to the monster illustrated in the *Post*; however its neck was not so thick or long. Its head was a trifle longer, more like a crocodile's. When it opened its mouth, we could see rows of regular teeth, maybe four to six inches long. It appeared to be playing on the surface, and would swirl in circles, bending its neck until it looked toward its tail, if it had one. It would gambol for maybe half a minute, then dive. This it did three times. We asked the captain if he was going to log the encounter. His reply was, 'No fear. They will say we were all drunk, and I'll thank you mister, not to mention it to our agents at Para or Manaus.'

This seems to be our crocodile sea-serpent, a surviving mosasaur or thalattosuchian. Its neck is not very long, and there is no question of vertical undulations. This animal bends sideways very flexibly and may therefore be a reptile.

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[1] When we come to the Dutch reports, we shall find that an identical-looking animal was seen that same summer in the same latitude, but right out at sea, by the steamer *Amsteldijk*. But it was a quite different animal that Captain Jean-Marie Le Pennec of the *Saint-Yves* saw between Stavanger and Paimpol in October: with its cigar-shaped body about 30 feet long and its dolphin's mouth full of teeth, it must have been an ordinary cetacean.

The sea-serpent that Major-General H. C. Merriam saw near Wood Island, Maine, in 1905 seems very different. Two years earlier he had scoffed when he heard that a party of ladies had seen one while boating in the same area. But now on 5 August 1905 he and his two sons and two of their friends were becalmed off Wood Island Light while on a pleasure trip. He described what happened in a letter to Dr Frederic A. Lucas of the United States Museum:

> We were startled by a loud splashing in the water some distance off our stern, and looking in that direction, we saw what appeared to be a monster serpent. Its head was several feet above the surface of the water, its long body was plainly visible, slowly moving towards our boat by sinuous or snake-like motion ... The animal continued its course, passing entirely around our boat ... keeping a distance of about three hundred yards ... it swam at a steady and rapid rate—not less than twelve miles an hour, keeping its head uniformly about four feet above the water and apparently intent upon examining our craft on all sides. It had no dorsal fin unless it was continuous.
>
> The color of its back appeared to be brown and mottled, shading down to a dull yellow on the belly. The head was like that of a snake, and that part shown above the surface—that is the neck—appeared to be about fifteen or eighteen inches in diameter ... I estimated its length at sixty feet or more. During all the time occupied in swimming around us, which must have been at least ten minutes, the head remained uniformly above the surface of the water, and then it quietly dove and disappeared.

Soon afterwards the wind arose, and, when the boat had slowly sailed about a mile towards the shore, the animal appeared again and swam parallel with the boat for some time before finally diving once more.

This persistent curiosity is a very mammalian trait, rather than that of a reptile. So one wonders whether the 'sinuous or snake-like motion' was really only horizontal, for even a major-general may be forgiven for not knowing that snakes undulate only in this plane.

In August of the following year the first and third officers, Spicer and Cuming, of the American Phoenix transatlantic liner *St Andrew*, said that they and a wealthy cattleman, Percy Hopley, distinctly saw a sea-serpent as they were rounding Land's End in Cornwall. Some 18 feet of its body appeared above water. 'The jaws,' reported the New York *American*, 'were armed with great fin-like teeth, and the body would probably be about 5 feet in circumference.'

It is hard to see what is meant by 'fin-like' teeth. Whale-bone perhaps? We shall probably never know.

The last American sea-serpent before the Great War was of the 'periscope' type, familiar elsewhere, but not in this part of the ocean. It was described to Ivan T. Sanderson by Mrs F. W. Saunderson in a letter of 15 March 1947 as a result of his *Saturday Evening Post* article. She recalled that in 1912 or 1913 she was travelling with her parents on a steamer from New York to Portland, Maine, when one of the two dozen passengers on board gave an exclamation of surprise:

> Off the starboard there emerged an enormous head supported by a huge eel-like body on a long neck about the size of a barrel. It rose about twenty feet above the water, giving the effect of a gigantic eel standing on its tail and about half submerged. It remained erect for half a minute or so and the head seemed to turn slowly as if the monster were taking a good look at its surroundings. Then it slipped slowly backward into the water leaving scarcely a ripple.

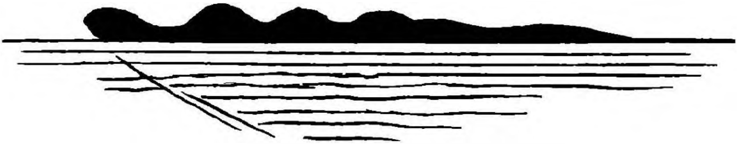
In Scandinavia, though it was the homeland of the *Sæ-Orm*, the reports during the Great Era are few, but like the earlier ones they are serious and detailed. During July 1894, which was exceptionally hot, two sea-serpents were seen at the very north of Norway off Finmark. One of them blockaded the little fishing village of Erviken, only three-quarters of a mile from Hammerfest, remaining a whole day in sight of the shore. Seven fishermen watched it there, but did not dare go to sea, nor even to sail to Hammerfest to ask a whaleship to come and harpoon it.

> The sea-serpent [*Finmarkposten* reported] was a dark yellow colour, had a rounded body and a length of at least 180 feet. It moved very fast through the water in serpentine coils. The head was about the size of a barrel, but rather more pointed in front, and immediately behind it the creature had a large ring [a constriction?] situated thus between the head and the body, which seemed to be smooth and without fins.

This short-necked monster was also seen the same day by the crew of three Hammerfest boats and from a neighbouring parish.

It was a sea-serpent with three humps—as the long-necked ones usually have—which appeared on 4 August 1902 at the other end of Norway, at the mouth of Oslofjord to the sailing yacht *Tonny*. There were eleven people on board including four children and the owner, the Rev. Hans Davidsen, who describes the creature they saw at 3.30 that afternoon:

> We soon saw that it was an unknown sea-animal moving at—so far as we could judge—about 4 *mil* [probably 4 *sjömil*, i.e. 16 miles] an hour. It was one or two cables away from us.
>
> From time to time, three big humps showed on the surface, and three of us also saw the creature's head, oblong in shape and, as we reckoned, about 3 feet long. The humps formed a continuous series and were dark in colour, with a shining surface. They seemed to be at least 2 feet in diameter. Seen from the side, the



83. The *Tonny* sea-serpent, 1902, after Pastor Davidsen

> animal's motion seemed to be undulating. It is impossible to give an exact estimation of the creature's length. From what we saw the head and the three visible humps were certainly 20 feet long altogether. From the distance between the head and the humps, and the length and thickness of the latter, the total length must have been about 60 feet. We all saw that the humps were joined, and could not belong to a series of creatures swimming in line.
>
> Because of its great speed, the animal left a broad wake behind it. We did not see foam, but we all noticed that the front part of the body raised a considerable wave. The head was held near the surface in a slightly oblique position. One of the passengers thought he saw a fin on the creature's back. We watched it for five to ten minutes with the naked eye and through powerful binoculars.

The sea-serpent seen in October 1906 near the fashionable resort of Saltsjöbaden, only an hour's walk from Stockholm, seems less usual in appearance, but the witness could hardly have been more distinguished: he was Victor Ankarcrona, Grand Huntsman to the Court of Sweden and a very close friend of King Oscar II.

He was walking along the shore with three friends, when he saw, some 200 yards away, an animal 60 to 80 feet long moving at the speed of a powerful motor-boat. Its motion seemed like that of a worm. Its head, which was like a turtle's, was very large in comparison to the circumference of its body. What they could see of the back was rounded and had no fins or other appendages. It was all greyish brown.

This description which the press gave seems rather fragmentary and is difficult to visualize. What a pity he did not draw a sketch!

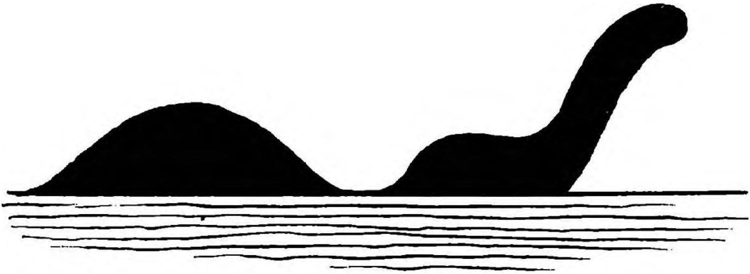
The account which a Sandvikær schoolteacher, E. R. Eliassen, gave of what he saw off Ingöy in Finmark around 1910 is more helpful, though he kept quiet about it for fear of ridicule and only after the Loch Ness affair told *Tidens Tegn* of Oslo in 1934.

It was a fine summer's day, and he was out in a boat fishing with his father when, some 50 yards away,

> A long neck, with a small head on it, rose 5—or possibly even 6—feet above the water. Behind the neck was a long hump, of about the same length. Astern of this the body was submerged for a short distance, but then rose again in the form of a larger hump—suggesting that those portions of it which remained hidden under the surface must be of great size.

Eliassen's father hurriedly hauled in his lines and moved away.

> Meanwhile, the creature had calmly submerged, and the sea was again as smooth as before. I should add that we had not observed it to have any forward motion—nor did we see it make any movement, except a slight deflection of its head.



84. The Ingöy sea-serpent, ? 1910, after R. Eliassen

When they had rowed a hundred yards or so they rested on their oars, thinking they were well out of its way, but the monster surfaced only a few yards from them.

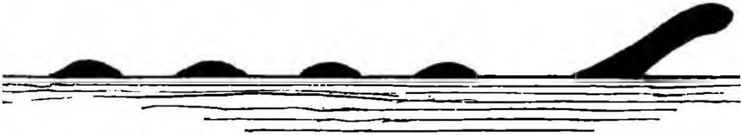
> It moved its head in much the same way as a duck does when swimming, and then turned it towards us, as if it had just noticed our presence. Immediately afterwards, it submerged again—without, however, showing any sign of alarm.

A swimming duck moves its head backwards and forwards, and not from side to side like a snake. Once again this shows the beast to be a mammal.

At the beginning of July 1910 Captain Jorgenson of the Norwegian three-master *Felix* arrived in Canada and told how he had seen a sea-serpent off Rathlin Island, north of Ireland. It writhed on the surface for only a brief moment so all he could say was that the part he saw was at least 14 feet long.

The last of these Scandinavian reports was sent to R. T. Gould by W. E. Parkin who worked in the office of the iron-ore mines at Bogen in the Norwegian district of Nordland from 1910 to 1914. In June or July 1914 a lady burst into his office and said, 'Do come out and see what an extraordinary thing has just come into the bay!'

> What met my gaze was an object sticking out of the water at an angle of approximately 45°. It appeared, from where I was, to be about five or six feet out of the water. Behind it was a gap, and then several regular humps. The largest number I counted at one time was seven, and the smallest five.



85. The Ofotfjorden sea-serpent, 1914, after W. E. Parkin

The animal swam slowly round the bay before the astonished eyes of several ladies fishing on the pier (one of whom had called Mr Parkin), several employees of the Mining Company, the piermaster, the postmaster and some old men and children. Several people launched rowing boats to try to see the animal from closer, but this seemed only to frighten it off, and it gradually made off to sea.

The British, as usual, offer the biggest harvest of sea-serpents, at least fifty during the Great Era, perhaps too many, for the very popularity of the subject in the press inspired hoaxes and even led honest witnesses unconsciously to alter their descriptions. The reports of this time are therefore often very odd and sometimes quite untrustworthy. Here are the most notable, carrying on from where we left off with the *Umfuli*.

A sea-serpent, probably about 60 feet long, showing two 'coils' 10 feet apart, appeared at Bernera on Lewis in the Outer Hebrides in January 1895. Angus Macdonald of Tobson described it as like 'a huge hornless bull'.

A few days later, on 7 February, a Free Kirk minister called Berners was on the Butt of Lewis, the northern tip of the same island, when

> 200 yards out, he saw a neck rise 15 feet out of the water, like a giraffe's, with a sort of ruffle 2 feet behind the ears ... It had two great staring eyes, like a bull's, fixed upon me, and I then saw three joints of its body 120 feet long fitting into each other like the joints of a lobster's tail.

This is not the first time—nor will it be the last—that this segmentation of the body is mentioned, and we shall have more detailed descriptions of it later. Meanwhile it is hard to doubt the minister's honesty. As John Yonge Anderson-Morshead said during a lecture on the subject:

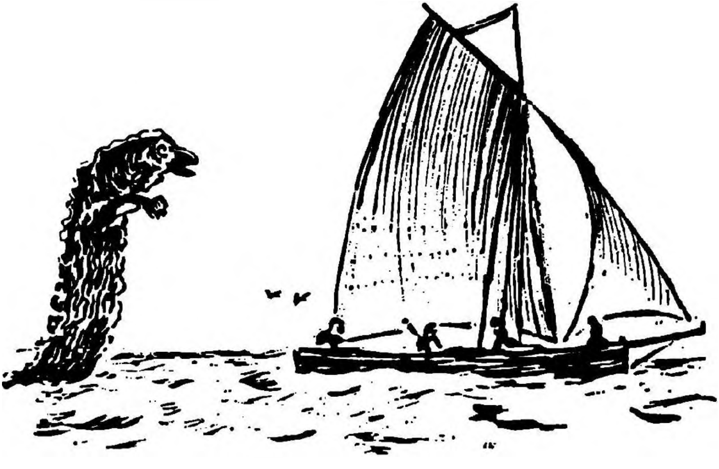
> Either the sea-serpent does exist in the shape of a huge swan-necked lizard 200 feet long, or a Freekirker has made a joke. I prefer the smaller miracle ...

The following year things took a turn for the worse. On 11 September Ivan MacGregor wrote to the newspapers to say that he had seen two sea-serpents between Stornaway, on Lewis, and Cape Wrath at the north of Scotland. As he was no Free Kirk minister it would be no miracle if he were pulling his readers' legs. And the tone of his description alone leaves no doubt about it:

> even to the naked eye [they] were ugly enough. When seen through glasses, however, they were positively hideous. No eyes could be discerned, but the mouth appeared to stretch from ear to ear, and the lips seemed wide enough to ride a safety bicycle over—in fact, it would be no great exaggeration to say a tricycle.

The next report is accompanied by a little sketch, but what Captain John Mutch Dawson and his five men on the sloop *Dart* of Dundee were said to have seen at the beginning of 1898 is none the more plausible for all that.

> The animal was over fifty feet long—what we saw of it—and there must have been a great length of body beneath the sea. In appearance it resembled nothing we can describe, nearer than the ancient animals of prehistoric existence that we sometimes find described and illustrated by scientific men.
>
> Altogether it must have been 180 feet long. The head was of a long tapering shape. The mouth being open, we saw the full size of it. It must have been large enough to swallow at least a cow or horse. The teeth shone in the faint light and gave the animal a fearful and terrifying appearance. A long flipperlike appendage seemed to dangle from its body about 15 or 20 feet from the head. The eyes shone with a green light, shifting from green to blue and often crimson and drove terror into our hearts. Its body had a mane-like fin running down the full length of the back and breast. It was of a dark colour and unlike any monster we in a natural way could ever have dreamt of.



86. The *Dart* sea-serpent, 1898

All one can say of this animal hoisting itself in a most unlikely way out of the water is that it is not a bit like 'the ancient animals of prehistoric existence', nor any sea-serpent described before.

As if even this were not enough to satisfy public taste, Captain Joseph Donovan and the officers and crew of the *Selma* were said to have seen a whole family of sea-serpents in the Sargasso Sea on 8 July 1898, the first monster they saw was 40 feet long and had a sort of beak like a swordfish, out of which it was spouting quantities of water. Then came another 200 feet long with a thick mane and a big fin on its back, and then a very little one barely 10 feet long: it also had a dorsal fin and was seen to have four flippers. Were mother and father sea-serpent taking their baby out for a stroll? It seems more likely that Captain Donovan is taking *us* for a ride.

The next report is hardly better, but for different reasons. At the beginning of October 1898 a most unusual-looking sea-monster was seen off Stonehaven in Scotland by Alexander Taylor, skipper of the fishing-boat *Lily*, and his crew. From a hundred yards away it looked like the hull of a capsized boat, but when they came within 50 yards it raised its head, which was flatter than a whale's, partly out of the water and made off to sea. On its bluish back it had two fins 20 feet apart and the shape and size of a small boat's sail. Behind the first one there was a hump like a camel's.

From time to time it raised its head some way out of the water and blew like a whale, but for a shorter time. The skipper of the *Lily* reckoned that the visible part of the animal was twice as long as his boat, which was 31 feet in length. He could not tell how long the whole animal was, because he had not seen its tail.

This animal that blew could not have been a basking shark with its dorsal and caudal fins out of the water. Might it not be one of those big dolphins with two dorsal fins once reported by Rafinesque and by Quoy and Gaimard, but never yet identified? Certainly it has nothing to do with any of our various sea-serpents and must be relegated to the side of their dossier.

The next report takes us to New Zealand, where happily opinion had not yet been affected by a flood of doubtful testimony. At a meeting of the Literary and Philosophical Society of Manchester on 13 December 1904 Dr W. E. Hoyle read a letter that C. Howard Tripp had written on 16 September:

> About 6 years ago I was getting into the 8 a.m. Monday train at Timaru, New Zealand, when, what at first appeared to be a sooty albatross, seemed to drop on to the sea with a great splash about 500 yards from me. The sea was calm, but the sun was slightly in my eyes. However, as I had never seen an albatross come down in that way before and disappear below the surface, I watched the spot, and soon saw it come up again, and then saw it was not an albatross, but the tail of some

> fish, as it had a long, thin body attached to it. It came down again with a great splash, disappeared and went up again, and then disappeared entirely. I should say that the body attached to the tail was about eighteen inches in diameter by the tail, and thickened to two feet or more about 12 to 16 feet from the tail, which was about the height it came up above the sea. I was naturally immensely surprised and struck with what I saw, so continued to watch, and a few seconds after the final disappearance of the tail I saw a most distinct serpent's head come out of the water about 50 yards from where the tail had disappeared; it came out with about 10 or 15 feet of body all of a uniform thickness of about 3 or 4 feet, seemed to look round, and then disappeared, and I never saw it again. Where I saw it was shoal water of about three fathoms and on the edge of a dolerite reef. It might have been a bottle-nosed whale, and I might have been deceived by the sun being slightly in my eyes, but my first impression at the time was, and still is, that it was a serpent-like creature. Subsequently I heard that the serpent had about two days previously been seen about 10 miles south of Timaru, and the movements I saw corresponded with the description I had read of a serpent being seen off the coast of the North Island of N.Z. about a year previously.

Dr Hoyle suggested that what Mr Tripp had really seen was the bottle-nosed whale which he himself had mentioned as a possibility—thus showing his good faith and open mind. But how could any known cetacean raise 10 feet of thin and cylindrical body out of the water?

There is nothing so serpentine about the three 'sea-serpents' which Captain John B. Martin of the New Zealand Shipping Company's barque *Opana* saw on 10 May 1899 at intervals of an hour. The first one, to judge by the distance between its dorsal fin and its tail, seemed to be 40 feet long. It had 'a large piece off its fin near the top'. This notch is so characteristic of the basking shark's tail that I can't help thinking it must have been one. 'On seeing the first one,' said the captain, 'I thought it was an immense shark.' Why did he change his mind?

In 1899 there was a fleeting hope in that distant part of the world that the sea-serpent problem was solved. In February the English steamer *Emu* had called at Suwarrow, a small island between Samoa and Tahiti, on her way to Sydney, where the natives told the captain that a serpentine monster had been washed up. Although decomposition was far gone, the sailors hoisted part of it on board. The Sydney newspapers said that its skin, covered with hair, was brown; its head was like a horse's; its total length was almost 60 feet and its weight 60 tons; the head was 3 feet long, some of the ribs were 2 feet 6 inches long and the spine was 4 inches in diameter. Two things like teeth could be seen at the end of the lower jaw.

This last detail should have told zoologists immediately that it must be some kind of beaked whale decomposed out of all recognition, and this is what Dr Waite of the Australian Museum found it to be.

From now on the British reports become curiouser and curiouser. On 21 May 1899, after H.M.S. *Narcissus* had rounded Cape Falcon near Mers-el-Kébir in Algeria, Lieutenant Boothby, who was on watch at about 5 in the morning, saw what is described as follows in the log:

> Observed a sea monster on the port bow, certainly over 150 feet in length; apparently propelled by large fins, and lying very low in the water.

Plenty of sailors were on deck while the monster swam for half an hour on the same course as the ship. When a journalist asked one of them, a signalman, if he was sure it was not a school of porpoises, he replied:

> We saw some porpoises just after and their motion was not the same. You could see the porpoises jump or tumble over, but this creature lay steadily on the surface, gently gliding through the water ... The monster seemed to be propelled by an immense number of fins. You could see the fins propelling it along at about the same rate as the ship was going. The fins were on both sides, and appeared to be turning over and over. There were fins right down to the tail.

The signalman also said that the head could not be seen because of the waves it was making, and added:

> Another curious thing was that it spouted up water [*sic*] like a whale, only the spouts were very small and came from various parts of the body.

Now, either these spouts of water were not breath, but splashes raised by rows of fins along the sides—in which case the cetacean centipede seen by the *Princess* really exists—or, if they were, it must be a strangely close-knit collection of several cetaceans, whatever the witness says.

This sort of honest doubt is much better than the well-described, but bizarre and obviously invented, details which far too often betray the fever of journalistic ghost-writing that we find in British reports at the beginning of the twentieth century. It is all very well to tidy up the grammar and even the style of a witness's testimony, but to ginger it up with sensational details is intolerable.

I shall therefore deal only very briefly with the dramatic tale of Captain Laurence Thomson of the steamer *Nemesis* published in *Wide World Magazine*, which specialized in 'true adventure' stories. In 1900 he saw what he called a sea-serpent off Cape Naturaliste. There is a photograph of the sailor and his ship to convince us they existed—but one still cannot believe in the truth of his story for a moment, nor in the drawing in the magazine (see Plates 56 and 57). It was a rubbery worm-like animal some 300 feet long and 3 feet in diameter, which rose out of the water in three huge arches in a way that was both mechanically and dynamically utterly impossible. In front of these arches a head rose on the end of a long neck, and on the spine was a sort of high soft fin that could fold up like a parasol.

Captain Thomson said that when he reached Fremantle a journalist asked him if he had not seen a sea-monster on the voyage, because Captain Campbell[1] of the *Perth* had seen one in the same waters. Thomson knew Campbell well, questioned him, and found that he confirmed every detail.

Although the editor of *Wide World Magazine* says it 'is, of course, nothing more than the gigantic octopus' (i.e. giant squid), the creature described is quite unlike one, and the story no more credible.

If there are real facts at the bottom of this story they have been altered out of all recognition and are therefore of no use to us.

The next report is curious, but more familiarly so, and concerns a many-finned monster seen on 13 July 1902 by Captain W. Firth and the crew of the steamer *Chillagoe* off the State of Victoria in Australia. It was reckoned to be 30 to 35 feet long and had four fins 4 to 5 feet high and about 6 feet apart. Its head was like a seal's but bigger, being about 2 feet across. When the ship came within a hundred yards of the monster it raised its head, stared at the ship and disappeared. The captain added that, 'All agree that it resembled the serpent seen by those on board the *Princess*, illustrated in the *Strand Magazine*, the only visible difference being the fins, which seemed more angular than those in the magazine.'

The next sea-serpent, met at sea in the equatorial Atlantic by the *Fort Salisbury*, seems much more fantastic, despite the relatively matter-of-fact way in which the second officer, A. H. Raymer, tells his story:

> October 28 [1902], 3.5 a.m.—Dark object, with long, luminous trailing wake, thrown in relief by a phosphorescent sea, seen ahead, a little on starboard bow. Look-out reported two masthead lights ahead. These two lights, almost as bright as a steamer's lights, appeared to shine from two points in line on the upper surface of the dark mass.
>
> Concluded dark mass was a whale and lights phosphorescent. On drawing nearer dark mass and lights sank below the surface. Prepared to examine the wake in passing with binoculars.
>
> Passed about forty to fifty yards on port side of wake, and discovered it was the scaled back of some huge monster slowly disappearing below the surface. Darkness of the night prevented determining its exact nature, but scales of apparently 1 ft. diameter and dotted in places with barnacle growth were plainly discernible. The breadth of the body showing above water tapered from about 30 ft. close abaft where the dark mass had appeared to about 5 ft. at the extreme end visible. Length roughly about 500 ft. to 600 ft.
>
> Concluded that the dark mass first seen must have been the creature's head. The swirl caused by the monster's progress could be distinctly heard, and a strong odour like that of a low-tide beach on a summer day pervaded the air. Twice along its length the disturbance of the water and a broadening of the surrounding belt of phosphorus indicated the presence of huge fins in motion below the surface.

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[1] Called Grant in a later issue of the same magazine.

> The wet, shiny back of the monster was dotted with twinkling phosphorescent lights, and was encircled with a band of white phosphorescent sea.
>
> Such are the bare facts of the passing of the sea serpent in latitude 5 deg. 31 min. S., longitude 4 deg. 42 min. W., as seen by myself, being officer of the watch, and by the helmsman and look-out man.

One might very reasonably reject these 'bare facts' just because they are so wildly extravagant. But may this not be because of the peculiar circumstances? For it happened in the middle of the night. The length could easily have been much overestimated, and based on the phosphorescent wake. But the equally fantastic width of the beast seen in phosphorescence so bright that even the scales could be distinguished, should surely convince us that it is all nonsense.

In 1903 the British press—or some of it at least—went quite mad about the sea-serpent. We find tales about the monster that cannot possibly be true presented with full documentation, photographs of the witnesses and facsimiles of the log. With the *Tresco* sea-serpent, which comes to us with the most substantial references, this reaches the peak of fantasy. Here is the gist of the account that Joseph Ostens Grey, the second officer of the Earn Line *Tresco*, gave to *Wide World Magazine*.

This cargo steamer, commanded by Captain W. H. Bartlett, left Philadelphia on 28 May 1903, and two days later was on an oily sea about ninety miles from Cape Hatteras, when Grey saw a great disturbance in the water. This proved to be a shoal of some forty sharks, packed together and apparently fleeing from some invisible danger.

An hour later what appeared to be a drifting wreck was seen on the port bow, and the ship made for it in case there were survivors. But it was an animal. 'A mighty and horrible head came out of the water, surmounting a tall, powerful neck that had the thickness and strength of a cathedral pillar.' This terrifying spectacle put the crew into a panic, which is described in such terms as Poe or Ambrose Bierce might have used. Let us concentrate on the beast, which 'looked for all the world like some fantastic Chinese dragon become a living reality; or a page from a scientific work picturing some ancient saurian monster, neither reptile nor beast wholly, but both in part'. (See Plate 58.)

This bizarre hybrid remained motionless, moving only its head and its 'long snake-like tail'. Its length was about a hundred feet, and it was 8 feet wide where the body broadened out unlike a true snake. At this point it had a hump with a high dorsal fin, and on its sides it had lateral fins like fans.

> There was something unspeakably loathsome about the head, which was five feet long from nose to upper extremity. Such a head I never saw on any denizen of the sea ... Underneath the jaw there seemed to be a sort of pouch, or drooping

> skin ... The nose, like a snout upturned, was somewhat recurved ... I can remember no nostrils or blow-holes. The lower jaw was prognathous, and the lower lip was half projecting, half pendulous. Presently I noticed something dripping from the ugly lower jaw. Watching, I saw that it was saliva, of a dirty drab colour ... While it displayed no teeth, it did possess very long and formidable molars [!] ... like a walrus's tusks ... Its eyes were also of a reddish colour ... They were elongated vertically ... They carried in their dull depths a sombre baleful glow, as if within them was concentrated all the fierce menacing spirit that raged in the huge bulk behind.

The head and body were covered with huge round scales, or oval on the shoulders, where (note the precision), they were 'some eight inches long, five inches wide, and four inches high, their apex being a distinct ridge'. Its colour 'could be compared to nothing but antique bronze, showing the distinct light green hue of the oxidised metal'. And as if all this were not enough, 'It lashed the water in fury. Its reddish eyes were fixed upon us; but, threatening as it appeared, it came no nearer.'

When it had thoroughly terrified everyone on the *Tresco* it merely turned and made off.

I need hardly say that despite all its documentation, none of the authors who have inquired into the sea-serpent have found the least confirmation of this tale.[1]

Compared with this, the monster seen at the beginning of June of the same year near the Shetlands by J. P. Jamieson seems ridiculously small and commonplace. Jamieson had left Scalloway at six in the morning to return home by sea, when he saw a 'sea monster' some 30 feet long. Its shape was like a sail, and 'on its head it had what appeared to be a horn, and an enormous flipper-like appendage'. Jamieson at once turned back, but his testimony was confirmed by the crew of the fishing-boat *Adelong* which had seen the animal four nights running at Burra Haaf. It had come so close to their boat they had had to push it away with a boathook. Ten of their nets had been destroyed by the beast. Its skin seemed to be covered with a thick evil-smelling mucus.

All these details, the nose ending in a point like a horn, the triangular dorsal fin, the size, the indolent nature, the mucus-covered skin, the torn nets—agree perfectly with its being a basking shark.

It was seen again off the Shetlands on 3 October by J. M. Robertson, and on the 17th by J. R. Anderson and three others who saw it near Symbister. They said that a little head and two big fins appeared out of the water—which is just what one sees when a basking shark basks.

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[1] Though this sea-serpent seems a complete invention, the *Tresco* herself is not. Apart from minor errors in tonnage and her owner's address, the details given agree with *Lloyd's Register*, and the photograph of the ship seems genuine. The writer clearly took more trouble with his shipping information than his zoology.

At all events these witnesses had not made it up.

We have little useful information about the serpentine animal the crew of the trawler *Rosa* saw that summer ten miles south-east of Montrose, on the east coast of Scotland. All we are told is that it raised 5 to 6 feet of what seemed to be its head out of the water. Is this a real sea-serpent at last?

But 1903 still has surprises in store. At dawn in the beginning of September the fishermen on the Scottish trawler *Glengrant* of Fraserburgh were preparing to try their nets some eighty miles offshore when there was an enormous commotion some 40 yards away:

> A huge dark body rose and made for the steamer ... with a swaying motion ... When 20 ft. off the vessel it reared to a great height above, and with a loud hissing noise plunged down again ... The vessel took a great dip by the bow and shipped a huge sea, washing the deck clear and flooding the engine-room, cabin and forecastle ... To the horror of the crew it was seen turning and coming in again at a furious pace ... Wiseman ... the only one who had not lost his head ... dashed below and got at a gun. When the animal was 15 yards away he fired at the head. Whether he hit it is not known, but it dived, and a long sinuous body followed, wriggling like a serpent.

It must have been a cousin of the *Tresco* monster, for it was 200 feet long and had a head like a seahorse 'with a long mane or fin down the back, great green glistening eyes, an enormous mouth and teeth'. This was the tale in the local newspaper. But it wasn't enough to tickle the fancy of London readers, for the *Daily Express* published a far more sensational and at the same time facetious version on 14 September.[1] This time the monster had 'a head like a Chinese dragon' and 'rested his chin reflectively on the truck of the mainmast', 'thrust his head down below' where he 'scorched the steward's whiskers and the paintwork with his fiery breath'. One of the men 'hit his body with a belaying pin, and it sounded as if an iron tank had been struck'. The rest of the tale is in the same spirit.

Certainly the British sea-serpents of the summer of 1903 seemed designed to shake the credulity of the most obstinate believer in the beast. Human disingenuity and perverted humour had made the situation almost desperate.

One of the few trustworthy reports in this lamentable year comes from South Africa and was published only in 1959 by Bertram Knight of Mowbray, Cape Province, who tells how he learnt the story in 1938 from a 'well-educated' old white fisherman from Hermanus.

One fine day in 1903 four sailing fishing-boats were working four or five miles off Hermanus, when this fisherman, who was on one of the boats, saw the men on the other boats heaving on their oars to make for the shore.

> Our crew was dumbfounded and at a loss to understand what had suddenly gone wrong—particularly as the fishing was so good. We soon found out. I

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[1] This also mentioned an uncircumstantial sighting made in Fiji in early August.

> looked across the sea, and, to my horror, I saw the most awful-looking monster with its head about four feet above the water, rapidly approaching our small boat. We were petrified and there was nothing we could do.
>
> Suddenly, about ten yards away, the snake-like creature raised its head still further to a height of more than 20 feet and looked down on us with eyes like saucers—not once but three times—for periods of about 15 seconds, and it was at least 120 feet long. It had a head the size of a paraffin tin and was covered with long hair that looked like seaweed. It appeared to be the thickness of an 8–10 inch water pipe. The body a black-brown, and the throat a whitish brown colour; it swam very fast and then very slowly. It suddenly made one terrific dive and that was the last we saw of it.

According to Professor J. L. B. Smith a sea-serpent was also seen at the same time off Hawston in South Africa. But this likewise has only recently been reported.

Moreover some 'real' sea-serpents must also have been seen in British waters at about this time. For instance, we know that one early autumn night in 'the early years of the present century', a lad called Sandy Campbell was fishing from a skiff off Skye with two older men. He was resting for a moment from hauling in the net when he saw,

> an object rising out of the water about fifty yards to seaward of them. It was about a yard high when he first saw it, but, as he watched, it rose slowly from the surface to a height of twenty or more feet—a tapering column that moved to and fro in the air. Sandy called excitedly to the old men, but at first got only an angry retort to keep on hauling the net and not be wasting time. At last Stewart looked up in exasperation, and then sprang to his feet in bewildered astonishment, as he too saw what Sandy was looking at. While this 'tail' was still moving in the air they could see the water rippling against a dark mass below it which was just breaking the surface, and which they presumed to be the animal's body. The high column descended slowly into the sea as it had risen; and as the last of it submerged the boat began to rock on a commotion of water like the wake of a passing steamer. Stewart was terrified; they dropped the net and rowed as fast as they could for the shore.

Campbell also said—though others put the date as much later—that in the following summer two old men were fishing from a coble off Rhum,

> when they saw an object about thirty feet in height moving to and fro out of the sea. The day was fine and hot, and they thought they could see the body in the water waving at speed towards them. They got such a scare that they made for the shore at once.

These two encounters with what seems to be a long-necked sea-serpent were told many years later to Gavin Maxwell, who reports them in admirably matter-of-fact terms in *Harpoon at a Venture*. No doubt we should have had a more spectacular version had the journalists of the time got wind of them.

But then things took another unexpected turn. So far none of the witnesses were 'conversant with natural history', as Sir Richard Owen had insisted they must be. But now, in 1905, two British naturalists, Fellows of the Zoological Society and very well known in ornithological circles, joined the list of witnesses. E. G. B. Meade-Waldo and M. J. Nicoll were making a cruise devoted to scientific research on Lord Crawford's yacht *Valhalla*, and were about fifteen miles off the mouth of the Parahiba in Brazil. Lord Crawford was on board, but did not see the animal. The story told in his family is that he was asleep in his cabin at the time, but nobody dared disturb him for fear of being attacked by his tame mongoose. His son, the Hon. Walter Lindsay, did, however see it. Meade-Waldo writes,

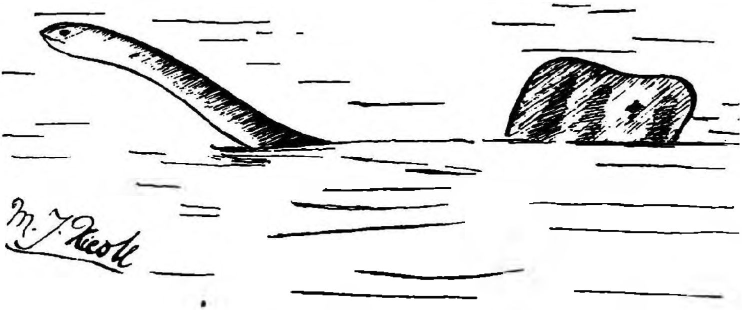
> On Dec. 7th, 1905, at 10.15 A.M., I was on the poop of the 'Valhalla' with Mr. Nicoll, when he drew my attention to an object in the sea about 100 yards from the yacht; he said: 'Is that the fin of a great fish?'
>
> I looked and immediately saw a large fin or frill sticking out of the water, dark seaweed-brown in colour, somewhat crinkled at the edge. It was apparently about 6 feet in length, and projected from 18 inches to 2 feet from the water.
>
> I got my field-glasses on to it (a powerful pair of Goerz Triëder), and almost as soon as I had them on the frill, a great head and neck rose out of the water in front of the frill; the neck did not touch the frill in the water, but came out of the water in *front* of it, at a distance of certainly not less than 18 inches, probably more. The neck appeared about the thickness of a slight man's body, and from 7 to 8 feet was out of the water; head and neck were all about the same thickness.
>
> The head had a very turtle-like appearance, as had also the eye. I could see the line of the mouth, but we were sailing pretty fast, and quickly drew away from the object, which was going very slowly. It moved its head and neck from side to side in a peculiar manner: the colour of the head and neck was dark brown above, and whitish below—almost white, I think.

In a letter which Meade-Waldo wrote to R. T. Gould many years later he gave some further details:

> It made a wave as it went along, and *under* water behind the neck I could see a good-sized body. As we drew ahead we could see it swing its neck from side to side and it lashed the sea into foam.
>
> The eye and the edge of the neck had a turtle-like appearance to us both. We were so astonished at the time that we could neither of us speak! We then visited (late) Lord Crawford, and he said he would stop the yacht if it was any use; but we decided as we were making about 14 knots it would not be much use.
>
> The creature seen from H.M.S. Daedalus ... and figured in the 'Illustrated London News' ... might easily be the same ...

Nicoll's account differs little from his companion's, and his sketch gives a good idea of what they saw. He also remarks:

> This creature was an example, I consider, of what has been so often reported, for want of a better name, as the 'great sea-serpent.' I feel sure, however, that it was not a reptile that we saw, but a mammal. It is, of course, impossible to be certain of this, but the general appearance of the creature, especially the soft, almost rubber-like fin, gave one this impression.



87. The *Valhalla* sea-serpent, 1905, after M. J. Nicoll

The two zoologists' reports do not add anything really new to our information about the sea-serpent, and they leave the creature's identity in doubt. Meade-Waldo likens it to a turtle, thus implying it is a reptile, but Nicoll comes to the conclusion it is a mammal. If we are to judge from Nicoll's sketch, which Meade-Waldo seems to have approved, it is more likely to be a mammal, since in reptiles the mouth runs back beyond the eye. But in many fish it does not, and, with its head an unbroken extension of its neck and its strange soft square fin, this sea-serpent, of a type hitherto unrecorded, might, I think, well be a fish.

The zoologists' accounts were published in the *Proceedings of the Zoological Society*, and British scientists, like their French colleagues, began to accept the existence of the sea-serpent, though with less unanimity and pertinacity. For instance W. P. Pycraft, who wrote scientific columns in the *Illustrated London News*, said:

> Seriously, we can no longer regard the 'sea-serpent' as a myth. There can be no question but that the ocean harbours some secret which we have not yet penetrated.

But twenty-eight years later his resolution had weakened, and he could say:

> It is high time it [the old story of the sea-serpent] was decently buried, and the stranger of Loch Ness will serve, at any rate, to knock a very large nail in its coffin.

Another respectable witness for 1905 did not reveal his testimony until he published his *Adventures in Peru* in 1924. C. H. Prodgers, an enterprising and level-headed British traveller, whose writing, according to R. B. Cunninghame Graham, 'exudes sincerity, just as a pine-tree drops rosin', saw one some time that year not far from the *Valhalla*'s encounter, that is to say off the island of Fernando de Noronha, 250 miles north-east of Cape São Roque, in the same place that he had seen one four years before. This time it was only 50 yards ahead of the ship. 'It had,' he said, 'a head as big as a cow's head, and the body looked as large round as a flour barrel. I saw only one coil of the latter, and that was a matter of eight to ten yards away from the head, and raised above the water a foot or so.'

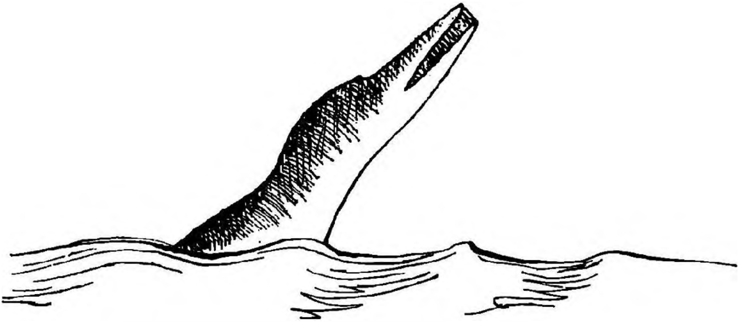
The ship's captain was very sceptical when Prodgers told him of it, but 'was, however, fain to admit that he had often heard of the monster, and that my description of it tallied with what he had been told'.

Ironically Holland took little notice of Oudemans's great work until long after France and Britain had done so. However, it did encourage the Dutch to send the author reports not only from Dutch ships but even from the coasts of that country. They range from 1904 to 1911.

The first is very vague. P. W. Deems merely told Dr Oudemans that, in the second half of July 1904, he was sitting on the beach at Katwijk, when he saw, 300 or 400 yards offshore, a dark-coloured animal passing at a speed greater than that of a train. It raised an oblong mass, rounded at the end and about 3 feet long, obliquely above the waves.

The second report, on the other hand, is extremely detailed. The beast was seen in the same year in the Straits of Bab-el-Mandeb, between the Red Sea and the Gulf of Aden, by the crew of the steamer *Ambon*, commanded by Captain G. A. Zeilanga. This is the account which the third officer, J. Vollewens, sent to Dr Oudemans:

> On 22 October 1904, at 11 o'clock in the morning, while we were passing through the Little Strait of Mandeb, or Eastern Passage, a strange animal was seen, which raised its head above the water for more than half a minute. This head had many points in common with a cayman's, but was, however, quite smooth above and below; the top was black in colour, the bottom perfectly white; the eyes; not at all prominent, were dark. In the two jaws, upper and lower, were long pointed teeth about 4 inches long. The head was raised about 8 feet out of the water.
>
> The body was dark on top, the belly white; on the back a fin was seen for a moment. The animal rose out of the water as shown in the drawing and sank in the same way. The diameter at the level of the neck was about 2 feet 6 inches. The beast was surrounded by a big shoal of little brown animals, about 20 inches long, which were very like young sharks. We saw the beast about six times.



88. The *Ambon* sea-serpent, 1904, after J. Vollewens

From Vollewens's excellent little sketch it is clear from the mouth, which does not reach to the eye, that the animal is a mammal. The shape of the head is like a beaked whale's. But they do not have quantities of teeth—never more than one or two pairs, and then only on the lower jaw. And it is far too large to be one of the dolphin family, which do sometimes have similar teeth. It seems to be an unknown cetacean, a giant of the Odontoceti; or one of the Archaeoceti. The quantity and arrangement of the teeth are more like those of a dolphin of some kind than of a zeuglodon or dorudon, whose teeth were more widely spaced and jagged at the back of the mouth, but we do not know enough about the Archaeoceti to be sure. Certainly it is very like the Massachusetts sea-serpent in the descriptions found by J. G. Wood, both in the shape of the head and the dorsal aileron.

In 1906 the sea-serpent was news in Holland itself. In January, after it had been seen off Zandvoort, C. J. de B..., the local postmaster, told the *Oprechte Haarlemsche Courant* that it was very commonplace. Several years before, he was standing outside the Germania café in the early afternoon when its proprietor, Mr Ristig, pointed at something moving through the sea at fearful speed.

'What can that be?' asked the restaurateur. 'I see it go by at midday every day at the same time, and at about 4 o'clock it comes back.'

'Perhaps it's a submarine?' suggested the postmaster, watching it with binoculars, for only a small part of it was visible above the surface.

Then, in June 1906, several workmen saw from a high dune on the beach at Zandvoort, near the wrecked hull of the *Alba*, what they described as a giant eel at least 60 feet long. It disappeared a few moments later, and afterwards reappeared with a second one.

Oudemans was told by one of his pupils, F. J. Knoops, that in July of the same year he had seen an animal about 50 feet long some 500 yards out off Katwijk, about ten miles south of Zandvoort. It showed two or three coils on the surface and moved at the speed of an express train.

The following summer, on 7 August 1907, P. W. Deems again saw the animal he had seen three years before. This time he watched it from the top of the Zeerust boarding-house at 5.45 in the morning and could make out 12 feet of its body. It went faster than a train.

The reader will have noted how all these witnesses were struck by the beast's speed—which they seem to have exaggerated. Even in those days expresses went more than sixty miles per hour, the speed of the very fastest of the fishes, and twice as fast as the fastest known sea-mammals. But high speeds at sea are so unusual that it is natural to exaggerate them a bit. At all events it could not have been a submarine. Before the Great War a submarine's maximum underwater speed was ten knots, and even today an atomic submarine does no more than twenty-five.

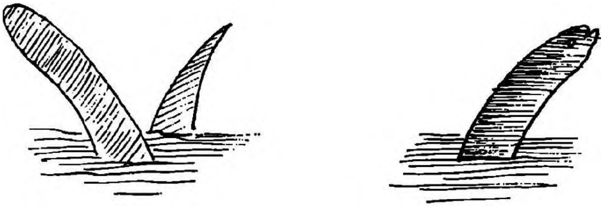
Meanwhile the Dutch were making other observations further afield. J. Vollewens whose account of his own encounter has been quoted, made a brief entry in the log of the steamer *Java* in 1906.

> In 10° 7.5′ N. latitude, 59° 23′ E. longitude [i.e. in the Indian Ocean 600 miles off Somalia] on 15 October 1906 seaman J. A. Spruijt, saw the head of a sea-monster raised some 6 feet out of the water, by his reckoning at 200 yards; it was shaped like a cayman, brown in colour, with a smooth skin, and was followed directly by the beginning of a body of the same colour.

A year later the officers of the steamer *Vondel* saw a sea-monster which they said agreed with Vollewens's original description. Actually it was very different, much more serpentine and more like the giant eel seen in Holland. This also happened in the Indian Ocean on 8 September 1907 at 10 a.m. in latitude 8° 30′ N., longitude 67° 15′ E.

> At irregular intervals the beast several times raised its head above the water and then let it fall noisily on the surface. The two first times the animal was seen it also showed its tail, which appeared and disappeared at almost the same time as its head. As the monster was seen head on and from a fairly considerable distance, certainly more than a mile, the head and tail seemed very close together, and it was not possible to judge the animal's length (see fig. 1[89]); there is likewise little that can be said exactly about the other dimensions. The other times that the animal rose out of the water; only the head was visible (fig. 2) and was watched until it was so far away that observation was impossible. The colour of the head and tail was black.

This report, to which two sketches were appended, was signed by Captain C. S. Visser and the third officer, G. B. U. Sorgdrager.



89. Two views of the *Vondel* sea-serpent, 1907, after Captain Visser

What they described as its 'tail' is more likely to have been a dorsal fin, which would explain why it appeared and disappeared at the same time as the head and also why it seemed so close to it. In any case it seems to be the same kind of animal (probably a fish) that the zoologists saw from the *Valhalla.*

It was also no doubt some monstrous white-bellied eel that a Dutch tourist saw in 1908 in Sognefjord, Norway. It rose vertically out of the water four times and dropped back again almost at once.

There were no more Dutch reports for two years. The next came from the middle of the North Atlantic. F. W. Van Erp, third officer of the steamer *Potsdam* commanded by Captain B. G. Bruinsma, wrote:

> On 13 December 1910, at one o'clock in the afternoon in 49° 20′ N. latitude, 24° 8′ W. longitude, at the changing of the watch, we saw a strange fish on the starboard, a little ahead of the beam. From close to, it seemed to us to be shaped like a gigantic snake, 120 to 130 feet long, and about 2 feet in diameter. It was moving very fast. From time to time the head was raised almost perpendicularly out of the water, up to a height of 8 or 10 feet; it remained in this position for some time and then disappeared again. These two movements went with a considerable splashing of water that rose to about 20 feet, while the tail stirred up the water no less violently (the tail was flat and wide in shape, with a forked end). One could also see one bend of the body. The colour was dark grey above and white below, which was very clearly marked on the head. The animal was watched for about three minutes.

I suspect that this dry and official report may be of great importance. It is true the length is probably much over-estimated, because of the preconceived notion that the beast is serpentine. But it confirms that the type of sea-serpent with a long neck, sometimes compared to a giraffe's, and appearing on the surface like a giant periscope or walking-stick handle, actually has a bilobate tail, which must really be its outspread webbed hind-feet. It is because this animal, whose tail-end is hardly ever seen, was first thought to be a serpent and then a plesiosaur, that it was always assumed to have a tapering pointed tail. This was in any case a quite unjustifiable extrapolation, for true sea-snakes have the tail flattened and oar-shaped, and some at least of the plesiosaurs had tails that widened into a diamond at the end.

The following summer, another Dutch steamer, the *Amsteldijk* of the Holland America Line, also met a similar animal in the North Atlantic in latitude 47° 30′ N., longitude 27° 11′ W., perhaps the same one that Gelard saw at about the same time off the Breton coast in the report already quoted. The second officer, J. A. Liebau[1], made the following note in the *Amsteldijk*'s log:

> On Saturday 19 August [1911], at half past one in the afternoon an animal was observed which was very probably a sea-serpent. Our attention was suddenly drawn by something hitting the sea fairly violently; about 60 yards to port a great mass of foam was seen, in the middle of which was a dark coloured sea-animal. Altogether it was very like a *Noordkaper* [North Atlantic Right Whale] but without a dorsal fin.[2]
>
> A few seconds later a body suddenly lifted above the water and rose about 8 feet above the surface; 30 feet further on the back of the sea-animal could be seen. After it had shown itself for ten seconds in this position, it fell back into the water, hitting it violently, and then disappeared into the depths and was seen no more.
>
> This colossus was about 2 feet 6 inches in diameter (that is in the part out of the water). A large proportion of the part that emerged seemed to belong to the head and sank progressively with the body. The diameter of the head seemed to our eyes to be a little greater than that of the rest of the visible part. The back was dark in colour, while the ventral part was much lighter. Because it appeared so suddenly, and at a considerable distance, we could not observe it more closely.

On 19 October the chief witness wrote in reply to Dr Oudemans's questions:

> Our general impression was that it was not a fish, and the shape of the head was fairly like a seal's [in answer no doubt to a leading question from Oudemans] ... On the head we could see a dark spot and line, which I think were the eye and mouth.

In Holland at this time it had become quite usual to print reports of the sea-serpent in zoological and maritime journals. Such doctors and biologists as Dr Vitus Bruinsma, Dr J. B. Van Leent and Dr A. J. Van Pesch had learnt their lesson from Oudemans and came out in favour of the much-maligned monster, and this influence had reached Germany, where Dr Richard Hennig, who was to become an eminent geographer, declared his support for *Megophias*.

[1] Not the third officer, A. Van der Mije, as reported in *De Zee* in October 1911.

[2] An unfortunate remark, since it is a feature of the Right Whales that they have *no* dorsal fin.

But there was no international agreement about what the animal was. At about the same moment Professor Vaillant in France, inspired by the Along Bay affair, suggested it was a mosasaur, Nicoll in England said he was convinced that the small-headed long-necked *Valhalla* animal was a mammal, and J. Vollewens in the Netherlands reported two sightings of a monster with a cayman's head and a short neck, and which was also incontestably a mammal. The scientists seemed as much at sea as the seamen.

All sorts of conflicting opinions were quietly beginning to hatch, and this is hardly surprising considering the monstrously varied brood the British went on coolly observing from 1905 to 1914: giant snails, hairy mummies, colossal swans, titanic chameleons, outsize cobras, super-pythons and crested giraffes.

It began modestly enough on 31 July 1906 with A. J. Butler's description of the 'strange creature' of quite small size which he saw wriggling on the surface 30 feet from his sailing boat off Berry Head near Brixham in Devon:

> It was, as nearly as I could judge, about 6 feet long, four or five inches broad, tapering to about two inches at the tail, and quite flat—like a long broad sword blade. It was not more than an inch in thickness, and of a buff colour. The edges were all serrated and gave the impression of being set along with tiny fins.

It was evidently either an oarfish, or a cutlass-fish—and so, perhaps, was the rather larger creature seen by two students off Tintagel Head in 1907.

We now come to more impressive monsters. In March 1907 the newspapers reported that some Tenby fishermen trawling in the Channel saw 'a monster fish 200 ft. long, with four fins as big as sails', and that 'its general appearance was that of a sea-serpent', a remark that often accompanies press reports of beasts not in the least like any classic type of sea-serpent. This one is a little reminiscent of the many-finned type. But unless its dimensions have been very much exaggerated it sounds more like a hoax.

The next witness is far more trustworthy. Sir Arthur Rostron, Commodore of the Cunard Line, was the man who saved more than 700 survivors of the *Titanic* at night among floating ice when he was commanding the *Carpathia* in April 1912. In his memoirs, *Home from the Sea*, he tells how on 26 April 1907, when he was chief officer on the *Campania*,

> we were coming one Friday evening into Queenstown when, off Galley Head, I noticed something sticking up out of the water.
>
> 'Keep clear of the snag right ahead,' I called out to the junior officer[1] who was with me on the bridge.

---

[1] Many years later, this officer, H. C. Birnie, no longer junior, but a Captain, R.N., confirmed the whole of Rostron's story to R. T. Gould and also told him that, when he was a child in 1894 or 1895, he and his father had seen on the beach at New Aberdour, Aberdeenshire, 'a long snake-like thing' extending from the water's edge to a rock some distance away.

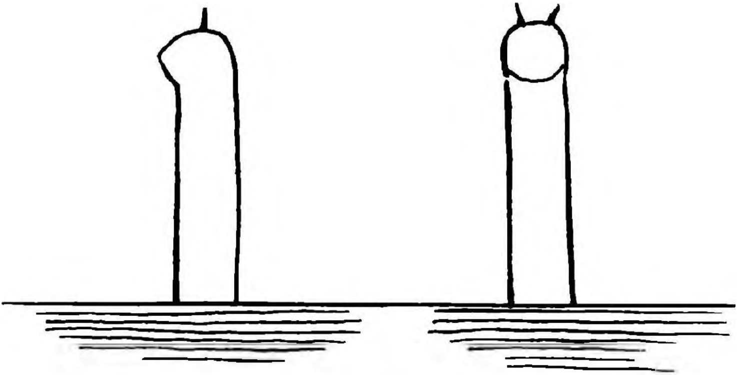
> We swung away a point but gradually grew nearer so that we were able to make out what the unusual thing was. It was a sea monster! It was no more than fifty feet from the ship's side when we passed it and so both I and the junior officer had a good sight of it. So strange an animal was it that I remember crying out: 'It's alive!' One has heard such yarns about these monsters and cocked a speculative eye at the teller, that I wished as never before that I had a camera in my hands. Failing that, I did the next best thing and on the white 'dodger board' in front of me I made sketches of the animal, full face and profile, for the thing was turning its head from side to side for all the world as a bird will on a lawn between its pecks.
>
> I was unable to get a clear view of the monster's 'features' but we were close enough to realize its head rose eight or nine feet out of the water while the trunk of the neck was fully twelve inches thick.

All the same when Rostron was interviewed by the *Daily Mail* at the time he was able to add:

> There were two protuberances where eyes might have been, but I could see no eyes ... It had very small ears in comparison with its enormous bulk.

On Rostron's sketch these 'very small ears' look like snail's horns, and remind one of the 'valves over-arching the nostrils' which Joass thought he saw on his 'plesiosaur' in Loch Hourn and the two unicorn's horns on the *Hope On* monster south of Panama.

When the captain heard about it, he asked Rostron what he had drunk at dinner. Neither the sketches nor the junior officer's corroboration convinced him. But in due course the *Campania* docked at Liverpool, and the crew returned after shore leave on the following Friday. That evening the captain called on Rostron and raised the matter again:



90. The *Campania* sea-serpent, 1907, after Sir Arthur Rostron

'Did you see it, Rostron?' he asked.

'Yes, sir.'

> The previous Monday evening [Rostron explains] when at home I was looking at the evening paper and was interested to read of an experience a man had gone through in the Bristol Channel. He had been picked up in a boat in a very exhausted condition, drifting out of control, as he had lost oars and boat-hook. He told the story that on the Saturday previous he had gone out fishing and in the evening had been attacked by a huge sea monster and had fought it off with his boat-hook and oars, losing them all. His description of the animal compared accurately with the one I had seen and as I saw it heading from the south of Ireland in the direction of the Bristol Channel there was left little doubt in my mind that it was the same—and no longer any doubt in the Captain's that my monster had been real enough.

If we look up the press reports, for instance in the *Liverpool Echo* of 30 April, it is hard to share Rostron's and his captain's conviction when we read that Mr M'Naughton was attacked by a monster 'like a huge mummy with sunken eyes enveloped in a sort of hairy flap'. This X-certificate creature leapt towards the rowing-boat in huge bounds.

> What happened after I can only dimly recollect [said M'Naughton]. The flabby monster seemed to leap out of the water as straight as an arrow for me. I hardly know what I did. I think I must have ducked and crashed the oar into the creature. At any rate I was flung violently into the water. When I regained the surface I managed to clamber into the boat. My terrible enemy was nowhere in sight. In a dazed condition, scarcely knowing what I was doing, I succeeded in reaching Portishead.

It must therefore have been less terrible than M'Naughton would have us think. It is not difficult to see what might have happened. A huge unknown sea-animal lifted its giraffe's neck close to the boat and so startled M'Naughton that he fell overboard, losing his oars and boat-hook. Later, so as not also to lose face, he exaggerated his tale, making his 'enemy' out more aggressive than it really was. For the story is most unlikely to be a complete invention when it happened only one or two days and little more than 200 miles away from Rostron's encounter. It would be an even more extraordinary coincidence if other people reported a similar animal at about the same time and place.

As a result of an article on the sea-serpent by R. T. Gould in *The Times* on 9 December 1933, Mrs J. C. Adkins wrote that she and her cousin had once seen a sea-monster off Padstow on the north coast of Cornwall. It showed a long neck ending in a little head and a series of small humps above the waves. She could not recall the date, but remembered reading at the time the officer of the *Campania*'s account which mentioned the attack in the

Bristol Channel. 'At the time I remember calculating that this happened just about the same time.'

In the same year another British sailor, S. Clayton, was third officer on the China Navigation Company's *Taiyuan* plying between Yokohama and Melbourne. One perfect summer morning, as she was steaming over the glassy Celebes Sea, he was on watch on the bridge when he saw dead ahead what he thought (in the best tradition) to be a floating tree-trunk, and altered course slightly so as not to risk damaging the screw. As he examined it through binoculars he saw that it was cane-coloured and thought the bark must all have been stripped off. While the ship went on approaching the wreckage at full speed he focused his binoculars on the front of it and clearly saw a fairly small patch of bright pink or red appear and disappear as if a mouth had opened. Clayton then lost the object in the binoculars, put them down and saw something even stranger with his eyes.

> Almost abreast now and no longer foreshortened, was stretched an enormous writhing serpent of fabulous size. Yet monstrous as it was, its proportions were as fine as our English Grass Snake, though the head may have been more angular and more boldly outlined.

Captain Clayton's description was written down long afterwards in 1960 at the request of friends when he was seventy-four.[1] He insisted that it could not be an optical illusion, as it was only 80 feet away when the ship passed, and went on to say:

> The creature so far as I could see, appeared a perfect replica of a land snake. It was at least seventy feet long, having a girth corresponding in size to its length for a snake. It was a rather dark cane colour, (of course, I saw none of the underside) having uneven dark brown patches or figuring such as one might expect to find joined by concatenation on closer inspection. Its convolutions were not vertical as many illustrations used to depict them, but horizontal in the plane of the surface of the water: the serpent being just submerged only. Apart from its writhing motion I could gather nothing about its propulsion ... It did not seem to panic at the very close proximity of the ship; but continued steadily along our side, its course being exactly opposite to ours.

His description leaves no doubt that it was a snake, perhaps some huge python; and pythons are known to swim to islands in tropical seas. He himself says:

> I have wondered if it could have been a python of staggering dimensions, something on the lines of the S. American Anaconda, but far larger, crossing between the islands.

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[1] He died soon afterwards, but Mrs Clemence, a friend in Eastbourne, sent his account to Maurice Brown of the B.B.C. after a notable broadcast on the sea-serpent.

But a 70-foot python would be double the world's record for the length of such snakes. Yet Captain Clayton seems very sure of his facts:

> Indeed, my private opinion of the serpent's length has always been eighty feet, but I state it here as seventy purposely to err on the side opposed to exaggeration.

Was Clayton so surprised at the sight of a 35-foot python that he exaggerated as much as this, or are there really pythons 70 feet long or more? There are no known ones. Nor are there rumours in Asia of gigantic snakes on land as there are in South America. Only very very rarely do reports of sea-serpents support the theory of a giant sea-snake, and a giant moray eel is a much more likely explanation of them. There is no doubt of Captain Clayton's good faith. He says, 'This story I have never considered of value, I have no witnesses of its authenticity or of its accuracy.' All the other officers were below at breakfast and the Chief Officer, when subsequently told, merely retorted, 'You should have taken more water with it, Mister.' But the first possibility should not be ruled out. The length of a writhing snake is not easy to judge, and a 30-foot one, as thick as a man, on a glassy sea would be a most impressive and remarkable sight.

The story has a peculiar sequel. On 15 June 1961 the *Daily Telegraph* printed a letter from O. D. Rasmussen of Tonbridge, Kent, saying that he and his family were sailing in the S.S. *Taiyuen* (*sic*) on the Celebes Sea on a fine summer's morning when he and a shipful of passengers and crew saw a sea monster like a dark-skinned snake travelling parallel with the ship half a mile to port.

> The neck disappeared below water level, but two humps followed, evenly spaced by the water in between the three visible parts. These were followed by a barely visible 'wake', stretching for possibly the length of a cricket pitch.
>
> This creature swam parallel with us for about half an hour and then veered half-left away from us to the west, completely disappearing in a similar period.

This account, which hardly agrees with Clayton's version (hitherto unpublished) in any of its details, both contradicts and confirms the captain in a most startling way. There are several possible explanations. Obviously after half a century both witnesses' memories were clouded and confused. All the same there seems little doubt that the sightings did not take place at the same moment. Perhaps Clayton turned in after his watch was over, and Rasmussen and the others then saw it retracing its steps. All the same it would be odd if Clayton had not heard about this. On the other hand they may have seen different animals on different voyages, perhaps years or even decades apart. For Rasmussen does not say when his sighting took place.[1]

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[1] Tim Dinsdale prints a sketch by Rasmussen in *The Leviathans* (1966), but gives no further details, so the question is still unsolved.

In the summer of 1907 several Englishmen of the firm of Hakker at Surabaya in Java went off crocodile hunting in the Kali Miring river in a steam-launch. Near the east bank of the mouth of this river they saw a thing like a long swan's neck appear out of the water—having first taken it, as the reader will have guessed, for a twisted tree-trunk. But through binoculars they saw that on the end of the neck was a mouth which opened and shut and revealed its teeth. At that moment the helmsman noticed that to starboard, on the other side of the launch, a sort of arch rose out of the water in a semicircle and was the thickness of a man's thigh. If it were the tail of the animal whose head was now nearby, the beast must have been at least 30 feet long. The strange creature was fired at and slowly sank out of sight. The local fishermen, when questioned, said that this was the second time the animal had appeared, and that as it was harmless they did not hunt it. They called it a *zeegangsa*, possibly a corruption of the Dutch *zeegans*, sea-goose.

Captain Harbord of the steamer *Sultan,* the chief officer, quartermaster and second steward saw a sea-serpent in 1909. But whether it was a *Zeegans* or not is impossible to tell from the laconic account in the usually over-detailed *Wide World Magazine*:[1]

> The length of the creature would be fifty feet, and from the top of its back to the water would be seventeen to eighteen feet. It was of great bulk. The body was light brown in colour.

This encounter took place in the China Sea.

But it is certainly a swan-necked sea-serpent that Howard St George and one of his sons saw in 1910 off the wild coast of Kilkerrin Bay in Connemara. From the account published by G. Cornwallis-West in *Edwardians Go Fishing* and additional information given to R. T. Gould, it drifted on an ebb tide, showing a brown and hairy body 'as big as a large 2-horse lorry', and with its head at the end of a 6-foot neck swaying from side to side as though looking for something.

Oudemans would have been delighted by these hairy sea-serpents. But there is no trace in his files of another very different one seen at about the same time in Irish waters, between Ireland and the Isle of Man. It was certainly no *Megophias*, yet it was seen by a most respectable witness, Vice-Admiral Robert H. Anstruther, R.N. In October 1908 he took command of H.M.S. *Caesar*, from whose bridge he saw the creature; and as Willcox, the other chief witness, had left her by April 1910 we can almost supply the missing date:

> In the first dog-watch I was standing on the bridge, when suddenly something shot out of the water right in front of me, about half a ship's length off, straight up into the air to about the height of the foremast head, about fifty feet.

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[1] The article in question is, apart from repeating the *Tresco* story, sensible and responsible, and its author, Reginald Pound, a distinguished journalist, for many years editor of the *Strand Magazine*.

> I, of course, had my galilee-glasses handy, and quickly fixed them on the quadruped—for a four-footed or, at any rate, a four-legged, beast it proved to be. In appearance it gave me the impression of a skinned chow-dog, such as one sees hanging up in the butchers' shops of Canton. In shape it reminded me of a chameleon, though a shortened one; the head and short tail also had a chameleon-like appearance.
>
> With outstretched neck and legs it fell, or rather dived, into the sea again.
>
> I had never seen such a creature before in all my long experience at sea, so I hastily called the navigating officer, who was at the standard compass, to come to my end of the bridge, in case the reptile, or whatever one may call it, should show itself again. No sooner had he got to my side than up it shot again, and I had another good look at it, and this time the navigating officer, Lieutenant-Commander (now Captain) H. J. L. W. K. Willcox saw it as well. It did not appear to have scales, but rather the shiny skin of a reptile. Its feet seemed like the claws one sees represented in figures of Chinese dragons. We waited and waited, but it never rose again.

The admiral's zoology is much at fault. But that is no reason to doubt his word. It merely means that we must be careful to interpret his meaning correctly. Chameleons, for instance, have particularly long tails—a short tail cannot have 'a chameleon-like appearance'. But no reptile has a *really* short tail—and perhaps he emphasized the shortness of the tail because he had automatically assumed it was a reptile. Moreover, since scales are the peculiar feature of reptiles, it was absurd, when he saw it had none, to speak of 'the shiny skin of a reptile'. Here again he seems to have had a preconceived idea it must be a reptile despite its non-reptilian characteristics.

The man-in-the-street seems particularly inclined to think sea-monsters must be reptiles. In fact very few known reptiles live in the sea, and it is the least likely theory to apply to the sea-serpent. But perhaps its very unlikeliness is what makes it sensational, and thus attractive.

Now the first animal that sprang to Anstruther's mind was a skinned chow-dog. Does this mean it was a mammal? It is much more likely. The only known sea-mammals with four legs are the sea-otter, the pinnipeds and the Polar Bear—the latter being found only in the Arctic. They all have claws, but only the pinnipeds have short, indeed almost non-existent, tails. This may help to show what the animal might be. At all events, it could not be a *Megophias* as described by Oudemans. But from some reports, the *Potsdam* of 1910 for instance, we now know that this tail, in some cases at least, was an error of interpretation. A short-tailed *Megophias* then? Very possibly.

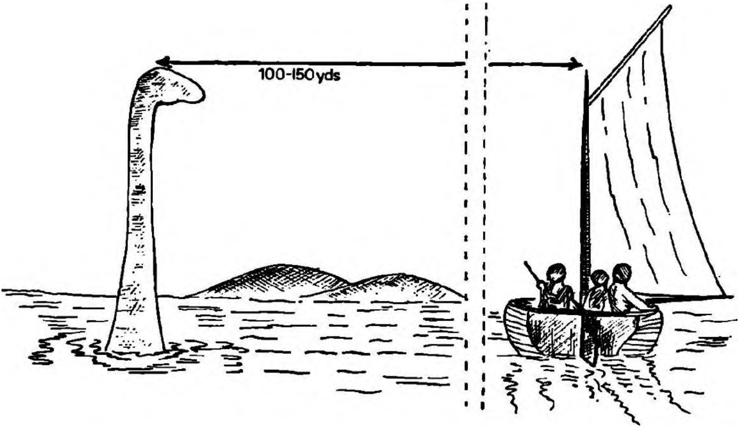
Thus the creature that Anstruther described so badly could have been a long-necked sea-serpent—a pretty common type, but was not given the usual description because it was for once seen wholly out of the water.

We have now reached the point where the less serpent-like a sea-serpent is the more credible it seems. The one seen by a man from Kirkwall in the Orkneys, and described in the characteristic 'periscope' position in his account published half a century later in Tim Dinsdale's *Loch Ness Monster*, is therefore very easy to believe in.

On a fine day in August 1910 W. J. Hutchison had gone shooting duck and plover with his father and a cousin around the Skerries of Work, some rocks in Meil Bay. When they reached the Skerries in their sailing boat they suddenly saw a school of whales leaping out of the water as they left the bay. Where they had come from the head and neck of a strange animal with a snake's neck and a head like a horse's or a camel's was sticking out of the water. While his father made for the safer shallows, Hutchison rashly aimed his gun at the monster, until his father told him to put it down and not risk wounding and provoking the animal.

They watched the strange beast for about five minutes. Then it sank slowly and vertically into the water without making the slightest splash.

> Distances are deceptive in the sea, but I reckon we would have been no more than 100–150 yards from the animal. We all three estimated that its head would have been *at least* 18 ft. above the surface. My first impression was that it looked as though someone had pushed an enormous tangle above the sea, substituting a horse's head for the leaves of the tangle. It appeared to be a dark brown colour, which is the colour of tangle (kelp) with lighter stripes running across, which could have been caused by the wetness of its body—or rather, neck. The head was



91. The Meil Bay sea-serpent, 1910, after W J. Hutchinson

> dark in colour and definitely resembled that of a horse or camel at that distance, and it appeared too large for a slender neck, which was like a snake; gradually thickening towards the sea's surface, where it would have been about the size of a big man or larger.

The next report takes us down the west coast of Scotland. On 30 August 1911 the *Sketch* announced that a holidaymaker fishing on the Wee Cumbrae, an island in the Firth of Clyde, had seen a 'monster of the deep' a hundred yards away. As it was not mentioned in the local papers nor the national press, and was used only to introduce a poem about the return of the sea-serpent heralding the 'silly season', it may well have been invented for this very purpose. But *true* 'silly season' sea-serpents are much too rare for me to pass over this one in silence.

Even rarer than an imaginary sea-serpent is one just like a snake. It was also in the Clyde that A. H. Vincent claimed in 1913 that he had seen one many years before when he was at school at Ashton.

Every morning he went to bathe nearby, about a mile south of Clork Light, and one day when the sea was particularly calm, he saw, only a few feet away, a huge snake rise from the sea:

> I was so fascinated that although I was shivering with fear I could not help but notice the appearance of the apparition. The head was small and shaped like a hooded serpent with tiny peering eyes that darted hither and thither. The neck was long (I should say quite ten feet). It seemed to be listening intently. The markings, I remember, were just like a serpent's—a criss-cross pattern, and of a brown fading into a dirty yellow.
>
> After a minute that seemed like eternity I came to my senses, and caused a disturbance in the water. Then the brute lowered its head and neck, and shot away like a flash.

Is this pure invention, something really seen but distorted by fear, or a childhood memory overlaid by the more familiar image of a snake? One cannot tell. It is most suspect, for it is very like a cobra and not a bit like any sea-serpent seen before. Nor does Vincent give us any evidence of his veracity.

The next sea-serpent, reported in 1911, much further down the west coast, off South Devon, seems hardly any more real. William T Cook of Instow claims to have seen it when he was going by boat to Westward Ho! with three ladies. When he tried to avoid some rocks he saw that the thing was alive.

> The boatman was so terrified that he immediately hauled down the sails, and, with the oars, pulled the boat towards the shore ...
>
> The thing then stretched itself out in an undulating coil, lashing the water. We calculated its length at from 60 to 90 feet, as its head did not appear. The body was

> round, and about the size of a 30-gallon cask. Almost black fins, with short intervals, ran the whole length of its back. Its body was of a brownish grey, with scales, very similar to a gigantic snake.

The thing with its strange crenellated back—or were they humps?—made off towards Clovelly, leaving a wake of foam and showing three or four coils of its body at a time, and Mr Cook wrote to the press expressing the hope that fishermen from that beauty-spot might also have seen it and could confirm his tale.

Continuing our tour of Britain to South Devon I must now put in a report that is not British. It is the only German report of the period and will have to come here for geographic rather than national reasons.

Captain Ruser, who then commanded the *Kaiserin Augusta Victoria* before being entrusted with the colossal *Imperator*, noted in his log that on 5 July 1912 at 6.30 a.m. he and his first officer, as well as an Elbe pilot, saw a sea-serpent near their ship off Prawle Point. The monster was 20 feet long and a foot to 18 inches thick and seemed to be fighting some other sea-animal, for it was whipping the water violently with its tail. It was blue-grey on the back and whitish on the belly Captain Ruser said that the whole of the animal's body was visible, and that there was no mistaking its reptilian form. I suppose by this he means its serpentine form, since he doesn't mention any legs. It sounds like some monstrous eel, for the pectoral fins on a conger may be held too close to the body to be noticeable; and on a moray there are none at all.

Then there is the report of a sighting made by two daughters of Sir Henry Rider Haggard, author of *King Solomon's Mines* and *She*, in July 1912. They were both at Kessingland Grange, their father's house on the Norfolk coast, when the events occurred which one of them described thus in a letter to her father:

> I happened to look up when I was sitting on the lawn, and saw what looked like a thin dark line, with a blob at one end, shooting through the water at such a terrific speed it hardly seemed possible anything alive could go such a pace. It was some way out over the sandbank, and travelling parallel with the shore.
>
> I tore into the morning-room, and got the glasses, and though it had in that moment nearly vanished in the distance we could make out it had a sort of head at one end, and then a series of about 30 pointed blobs, which dwindled in size as they neared the tail. As it went along it seemed to get more and more submerged, and then vanished. You can't imagine the pace it was going. I suppose it was about 60 feet long.

Sir Henry sent this report to the *Eastern Daily Press*, but perhaps his reputation as an imaginative writer did not inspire confidence, for only one article on the sea-serpent has ever mentioned it:

In the same year a Mr Stone and two other people saw from the beach of St Margaret's Bay, Kent, a 'long sinuous black body'. It moved rapidly, apparently by undulations, till a vessel appeared, when it at once sank.

We now leave British shores for yet another report elicited by Maurice Brown's and Martin Chisholm's memorable B.B.C. broadcast, which I have mentioned already and shall have more than one occasion to mention again. One of the letters it provoked was from a retired shipmaster, Captain A. F. Rodger of Glasgow. In the spring of 1912 he was the young third mate on the steamer *Queen Eleanor* and saw a sea-serpent off Cape Matapan, the southern tip of Greece.

> The creature was on a parallel course to us and going at about the same speed, and it remained visible enough for our Chief Engineer to go down to his cabin, bring up his rifle, and take a shot at it. Whether he hit it or not I do not know, but it then disappeared. It appeared to us to be the commonly reported eel-like creature having no distinct head but the long neck and two coils or humps behind the neck.

In reply to a request for further information Captain Rodger replied that he had watched it for about five minutes and that it was

> Distant about 1 cable, approximate length laterally about 30 feet, diameter about 18 inches. Colour what we soon after learned to know as camouflage.

And he added this remarkable detail:

> I cannot be certain about undulations but I can remember seeing underneath the coils as it was on our port side with the sun, of course, to starboard. I still favour its having been a giant eel or sea-snake though I know none of that length has ever been reported.[1]

As I have already said, all animals—particularly sea-animals that can submerge—are of much the same density, so it is impossible for them to swim with their bodies clear of the water. One might therefore be inclined to reject this report as too improbable. On the other hand one can see daylight under a long-necked animal's neck as it plunges its head into the water, and this may have led the captain to generalize too far. At all events if he saw vertical coils it could not have been a fish or reptile unless it were swimming on its side, which it might do, if only momentarily.

The 'camouflage' colouring reminds one of the morays, and the witness stresses the animal's likeness to an eel. One is reminded of the serpentine animals 'spotted in various colours' which Mongitore said tore the Sicilian tunny-fishermen's nets. And we shall later find reports of morays of quite phenomenal size in the Mediterranean.

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[1] Congers may reach 9 feet, and morays 10 and perhaps a little more, but this is the maximum known length.

On 11 October 1912 at Jeffreys Bay, about 60 miles south of Port Elizabeth, Cape Province, a sea-serpent was seen by three men and a ten-year-old boy, whose mother wrote to her husband John Pears Murray, C.B.E., Financial Secretary of Basutoland, as follows:

> On Friday last, Mr. Beckett, Mr. McKechnie and Mr. Eddie Nathan were fishing on the sandy beach near the Beach Hotel, Jeffreys Bay. Bobbie [her ten-year-old son] was with them. Suddenly they saw a black head in the waves, and Mr. McKechnie says he looked round to see where Bobbie was, as for a moment he thought it was he in the waves. Then the thing appeared again and they could see it was a sea-serpent 15 to 20 feet long, with a huge black and yellow head and enormous body. It was so close in they could see its eyes. Mr. Beckett tried to cast his line over it, but it cleared off as soon as it saw him. The monster was rolling over and over in the waves and its big head was raised a full three feet above the surface. Bobbie was quite scared, and says that if Mr. Beckett had succeeded in catching the serpent he would have cleared for all he was worth for the hotel.

Nearly half a century later, in 1960, the boy, now Robert E. K. Murray, O.B.E., gave the press a much more sensational account, in which he vividly described a huge snake, 15 to 20 yards long, that undulated in an inverted U and reared 'twice my own height or about 10 feet above the water'.

> Against the yellow of its mouth when open, I could plainly see its black forked tongue darting in and out in the manner of any land serpent, of which I had seen many before that time.
>
> The body of the sea-serpent was about the thickness of a fully grown man but tapered towards the head to a neck of about eight inches in diameter.

Despite Mr Murray's protestation that his mother must have confused feet with yards, one can hardly credit that anyone would have cast at such a monster with a rod and line. It is hard to believe that a frightened boy could recall so many details after so many years, or that this account is not the result of imagination filling the gaps of memory with the help of preconceived ideas. How else can one account for a snake's forked tongue in an animal that undulates vertically? On the evidence of the original letter it was perhaps just a large python which had been carried out to sea by a river in flood—as sometimes happens on the South African coast.

It was a long-necked sea-serpent that was seen from the *Dover Castle* in the early afternoon of 17 October 1912 in the equatorial Atlantic off Gabon (latitude 1° 31′ N., longitude 9° 31′ W.). Mr A. Wilmot, chairman of a committee formed for the purpose on board, reported briefly that Mr John Fleming, civil engineer, at Natal, saw from the port side of the main deck the head and neck of a monster—seemingly a serpent—extending at least 14 feet above sea-level.

The next case does not appear in any book or article on the sea-serpent—and apparently for good reasons. The animal seems to have been fairly small, was not serpentine, and was seen on dry land. Yet perhaps it throws more light on the affair than any other. We have to thank Hartwell Conder, the Tasmanian State Mining Engineer for making the story known. He was prospecting the little-known area between Macquarie and Port Davey on the west coast of Tasmania when two of his colleagues reported seeing an animal so strange that Conder cabled about it to Mr Wallace, Tasmanian Secretary of Mines, who duly informed the press, despite Conder's remark that 'the men who saw it and myself anticipate quite cheerfully the smiles and incredulity of those who read this account,' and his philosophical comment, 'No one is asked to believe it.'

Here is one press report:

> The animal was seen by Oscar Davies, foreman prospector, and his mate (W. Harris), who are working under myself ... I have known both of them for a considerable number of years, and can guarantee absolutely their sobriety, intelligence and accuracy. They were walking along the coast on April 20 [1913], just before sundown on a calm day, with small waves rolling in and breaking on the shore, when at a distance of about half-a-mile they noticed a dark object under the dunes which surprised them by showing signs of movement. They advanced towards it, and finally came within gunshot. When about forty yards off it rose suddenly and rushed down into the sea. After getting out about thirty yards it stopped and turned round, showing only the head above five seconds, and then withdrew under the water and disappeared.
>
> The characteristics are summarized as follows: It was 15 ft. long. It had a very small head, only about the size of the head of a kangaroo dog. It had a thick arched neck, passing gradually into the barrel of the body. It had no definite tail and no fins. It was furred, the coat in appearance resembling that of a horse of chestnut colour, well groomed and shining. It had four distinct legs. It travelled by bounding—that is, by arching its back and gathering up its body so that the footprints of the forefeet were level with those of the hind feet. It made definite footprints. These showed circular impressions with a diameter (measured) of 9 inches, and the marks of claws, about 7 inches long, extending outwards from the body. There was no evidence for or against webbing ... The creature travelled very fast. A kangaroo dog followed it hard in its course to the water, and in that distance gained about 30 ft. When first disturbed it reared up and turned on its hind legs. Its height, standing on the four legs, would be from 3 ft. 6 in. to 4 ft.
>
> Both men are quite familiar with seals and so-called sea-leopards that occur on this coast. They had also seen before and subsequently pictures of sea lions and other marine animals, and can find no resemblance to the animal that they saw.

This last information is extremely important. For the sea-lions are just what this animal reminds one of. One of the differences between the Otariidae and Odobaenidae (sea-lions, fur-seals and walruses) on the one hand and the Phocidae (hair-seals) on the other is in their method of locomotion. Sea-lions, fur-seals and walruses can turn their hind-legs so the toes point forward, and can thus stand on four legs and walk, or rather bound, along as this Tasmanian beast did. Hair-seals are obliged to drag their hind-legs behind them and can only wriggle clumsily along. The two groups of pinniped used to be known as the Gressigrades, or 'walkers', and the Reptigrades, or 'crawlers'.

There are no sea-lions in Tasmania, but there are two species of the genus *Neophoca* nearby: one on the south coasts of Western Australia and South Australia (*Neophoca cinerea*) and the other in New Zealand (*Neophoca kookeri*). It would not be odd to see a stray specimen in Tasmania. But the witnesses were positive it was not a sea-lion. Nor are sea-lions ever more than 8 feet long; they could not have left such big footprints, and their heads are not particularly small.

Might it not then have been a young specimen of Oudemans's *Megophias*? Admittedly it had no tail, but, as I have shown, *Megophias* did not necessarily have one either. And though it had an 'arched' neck, the witnesses do not say that it was particularly long. But in all long-necked mammals the neck is proportionately shorter in the young.

For the moment let us just note that a sort of long-necked, small-headed sea-lion, that could well be a young tailless *Megophias*, has been reported from Tasmania, and that the *Potsdam* and *Caesar* reports have already given us some idea of this animal, which though strange, is much less strange than many in the zoo.

This is probably the place to insert the sea-serpent seen around 1913 in the Arabian Sea about a day's steaming from the Gulf of Aden by John Scott Hughes, author of books on sailing, and for many years yachting correspondent of *The Times*. His description in the *Observer* forty years later is a vignette that is vivid without being very informative. He was on look-out at the beginning of the first dog-watch (4 to 6 p.m.).

> Presently my idle-roving eyes were attracted to a slight and silent disturbance of the sea, distant between 200 and 400 yards, and in a position five to six points on the port bow. What made this slight disturbance was the emergence above the water of a series of some six to eight arches, which seemed to undulate as they (or It) progressed on a course reciprocal to the ship's. What my eyes next saw ... was the neck, higher and longer than the arches but of less thickness, supporting a disproportionately small head, wedge-shaped.

This brings us to the 'sea-giraffe' which the Allan Line steamer *Corinthian* met on 30 August 1913 on the Great Bank of Newfoundland when sailing from London to Montreal. The animal was seen by the quartermaster Ayres and by the second officer, G. Batchelor, who did an extremely detailed ink and wash drawing. This charming piece of primitive art (see Plate 59) shows a half-submerged giraffe with Japanese fans instead of front legs, and with the moustache and beard of a pantomime mandarin. This drooping moustache makes an amusing contrast with the handlebar one on the face of the artist, who seems to belong to some old Mack Sennett film.

The description of the animal may make us smile as much as the picture, but they are both documents of prime importance. I have seen the original letters that Batchelor wrote to Oudemans at the time: their honesty is most convincing in spite, or perhaps even because, of their very simplicity.

Here is what he said:

> As the 'Corinthian' was ploughing her way westward I was officer of the watch 'on duty at the time'. At 4.30 a.m. in the cold gray dawn of August 30th 1913, on The Grand Banks of Newfoundland, the lookout man had just gone off and the third officer had left the Bridge to see if all was well around the decks, while casting my eyes around the horizon I picked up an object about a mile off right ahead. The best conjecture I could make as to its nature was that it was a fishing boat laying end on to us. In the dense and extensive fogs which sweep over the fishing banks sailors frequently become separated from their schooners and many starve for days before they are picked up. I had such an accident in mind as I watched the object ahead. When it suddenly disappeared beneath the surface, being still unenlightened I thought of tragedy. Suddenly, however, after I had meditated a minute upon serious things something surprising showed itself about two hundred feet away from the ship.
>
> First appeared a great head, long fin-like ears and great blue eyes. The eyes were mild and liquid, with no indication of ferocity.
>
> Following sad eyes came a neck, it was a regular neck all right, all of twenty feet in length which greatly resembled a giraffe.
>
> The monster took its time in emerging, but it kept emerging so long that I wondered what the end would be.
>
> The neck ... seemed to be set on a ball-bearing, so supple was it and so easily and rhythmically did it sway while the large liquid blue eyes took in the ship with a surprised, injured and fearful stare. The creature was well fixed for side arms. Three horned fins surmounted its bony head, probably for defence and attack or for ripping things up. The body was about the same length as the neck very much like that of a monster seal or sea-lion with short water-smoothed fur.
>
> The tail was split into two large fins.
>
> Its colour scheme was good, although some might think it giddy; light brownish-yellow tastefully spattered with spots of a darker hue.
>
> For a minute the creature inspected the 'Corinthian' with its roving gaze, and then it disappeared, showing its after-works as it dived. Its whole attitude while in sight was that of one 'moving about in worlds unrealized.' It seemed to be trying to comprehend a curiosity which it had good reason to believe might be a new danger. I almost felt a tenderness for it, and never have I experienced such a minute in my life. Down in my room I had a camera and a rifle. Yet I was the only

> one on the bridge besides the quartermaster at the wheel. I don't mind confessing that I wavered between my duty and my desire for some kind of a shot. Finally I stayed, but I don't know whether I should take full credit for that or not because I hated to lose sight of the thing. As it watched me it churned the water into foam and spray with its huge front fins. As it went out of sight it emitted a piercing wail like that of a baby. Its voice was altogether out of proportion to its size.

Mr Batchelor's zoology is no less bizarre:

> This strange creature is either a native of the Arctic regions which has come down with the stream, which brings the ice-bergs, or else of the mile-down bottom of the sea. In any case it is only a trip.
>
> From its general appearance I surmise that it grubs on jelly-fish and the plant-growth at the bottom of the sea. What does it really live on? But as to that we can't tell, because it is something new to us, and its food would probably be just as strange.
>
> Zoologically speaking, as I got a good view of the creature when diving, I could only describe it as identical with the Sauropterygia which is described in zoological reference books as follows ...

But the reader knows what the Sauropterygia (or plesiosaurs in the widest sense) are like, so we will move on to Batchelor's final suggestion:

> The location of its appearance was Lat. 47° 51′ N. Long. 48° 30′ W. and I am of the opinion that the wreck of the 'Titanic' a few degrees south from the position I saw the monster may have had something to do with its presence.

We cannot hope to follow the second officer's reasoning. Why the *Titanic* disaster should have made this peaceable monster appear, and why a furry beast with ears should be thought to be a plesiosaur are indeed mysteries. But this is no reason not to accept one of the most detailed and useful descriptions of one type of sea-serpent. If it is true and authentic, it shows once again that there is a big long-necked sea-mammal, with big flippers and with a seal's fur and whiskers—and a beard into the bargain. This animal is fairly like Oudemans's *Megophias* except that instead of the long tapering tail it has a bilobate tail like a whale's, and this no doubt is its webbed hind-feet spread and fanned out, thus making it even more like a pinniped. We have a bigger more elongated version—an adult if you like—of the Tasmanian beast seen by Hartwell Conder's men.

We find that when a little light is shed on this puzzling affair it is often as a result of marginal observations by people without preconceived ideas and who did not think that what they were seeing was a sea-serpent. And by 1914 the sea-serpent seemed to be getting less and less like a serpent.

12

Victim of Man's Battles

(Through Two Wars, 1914-1945)

POLONIUS. By the mass, and 'tis like a camel, indeed.
HAMLET. Methinks it is like a weasel.
POLONIUS. It is backed like a weasel.
HAMLET. Or like a whale?
POLONIUS. Very like a whale.

Hamlet

THE story of the sea-serpent often seems to follow the moods of history. And naturally enough during the Great War it became involved—sometimes too involved for its own good—with naval warfare.

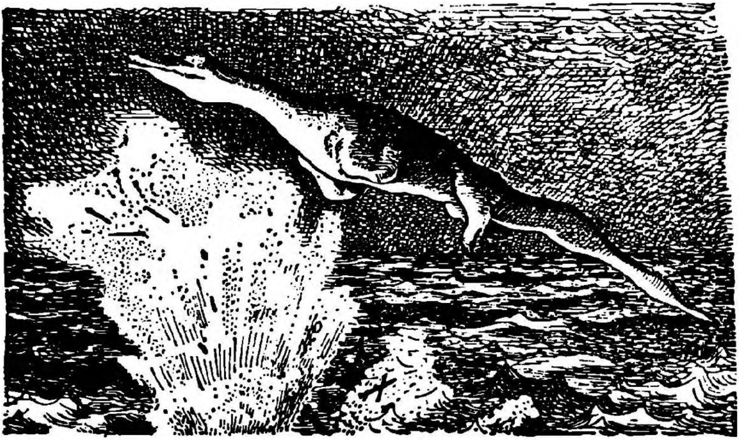
The first incident occurred in 1915, though it was not revealed until the Loch Ness monster hit the headlines many years later. This is how the Commander of *U 28*, Georg Günther Freiherr von Forstner was reported in a newspaper:

> On 30 July 1915 our *U 28* torpedoed the British steamer *Iberian* (5,223 tons) carrying a rich cargo in the North Atlantic. The steamer, which was about 600 feet long, sank quickly, the bow sticking almost vertically into the air, towards the bottom a thousand fathoms or more below. When the steamer had been gone for about 25 seconds, there was a violent explosion at a depth which it was clearly impossible for us to know, but which we can reckon, without risking being far out, at about 500 fathoms. A little later pieces of wreckage, and among them a gigantic sea-animal, writhing and struggling wildly, were shot out of the water to a height of 60 to 100 feet.
>
> At that moment I had with me in the conning tower my officers of the watch, the chief engineer, the navigator, and the helmsman.[1] Simultaneously we all drew one another's attention to this wonder of the seas. As it was not in Brockhaus

---

[1] Oberleutnants Dieckmann and Romeiss, Chief Engineer Ziemer, Launch Coxswain Parisch and Able-Seaman Bartels.

> nor in Brehm we were, alas, unable to identify it. We did not have the time to take a photograph, for the animal sank out of sight after 10 or 15 seconds ... It was about 60 feet long, was like a crocodile in shape and had four limbs with powerful webbed feet and a long tail tapering to a point.
>
> That the animal should have been driven up from a great depth seemed to me very understandable. After the explosion, however it was caused, the 'underwater crocodile,' as we called it, was shot upwards by the terrific pressure until it leapt out of the water gasping and terrified.



92. The *U 28* sea-serpent, 1915, after Richard Hennig

If Forstner has been correctly reported about the times, he risks being very far out in his reckoning of depth, for the wreck would have had to sink at about 90 miles per hour to get there in time. To sink even 100 fathoms in 25 seconds would be good going. And even if the explosion did take place at 500 fathoms it is most unlikely that the animal, or even wreckage, would be instantaneously shot up from so great a depth. It is much more likely that the 'underwater crocodile' was not an abyssal animal at all and was relatively close to the surface when the shock wave of the explosion or a huge bubble of escaping air made it leap out of the water.

Only in such exceptional circumstances can an unknown sea animal be clearly seen in its entirety, and it is interesting that Captain George Hope of H.M.S. *Fly,* one of the few other witnesses to see the whole of a sea-monster, also described it as rather like a crocodile, though in his case with a much longer neck.

Although there were more pairs of eyes scanning the seas in war than in peace, they were not looking for sea-serpents, but for periscopes, and any animal rash enough to present itself as one would have been taken for a submarine. It is a commonplace of naval history that many more submarines were sighted by the British Navy than were shown to have been there by the German records, and this is sometimes given as an example of human error. But may not some of these 'periscopes' have been animals?

I have, at all events, had an interesting letter from Commander E. Plessis, whose remarks about the Along Bay dragon I have already quoted. The illustration of Muir's drawing of the *Tyne* sea-serpent (Fig. 96) in the French edition of this book reminded him of something he had seen in late May or early June 1916 when he was a sub-lieutenant and was being taken by a Greek fishing-boat with a party of sailors to land on Thasos:

> Coming from Salonica we were coasting along the west of Thasos when I saw on the starboard beam a periscope ... heading in exactly the reverse direction. This periscope stood 5 to 6 feet out of the water, and moved at great speed, about 10 to 12 knots. I gave the 'submarine warning'. But we looked like a peaceful neutral fishing-boat, and the periscope did not alter course and seemed to disdain us. Several days afterwards the chief of the Naval Staff at Salonika ... reprimanded me for giving the 'submarine warning' when he was certain that there were no German submarines in the area ...
>
> I should add that the speed of this periscope was impossible, for neither the German submarines nor ours could do 6 knots submerged. I had forgotten this adventure when your figure suddenly brought it to mind.

Some such 'periscopes' may have been accidently destroyed. And one sea-serpent suffered deliberate assassination at Allied hands. On 22 May 1917 the armed merchant cruiser, H.M.S. *Hilary*, was patrolling some seventy miles south-east of Iceland. There was brilliant sunshine and perfectly smooth sea, and the Icelandic peak of Oraefajökull could be seen clearly on the horizon. At 9 a.m. Captain F. W. Dean, R.N., was sitting at his writing table in his cabin when he heard a shout:

'Object on the starboard quarter.'

He ran on deck and asked, 'Was it a periscope? Where is it?'

'No, it is not a periscope,' replied the officer of the watch. 'It looks more like a living thing, but it is not a whale.'

> and he pointed at an object which at first glance suggested to my mind a tree trunk with only the knobby ends (from which branches and roots had been cut) visible. A careful look through my glasses, however, made it clear that the thing was alive, and that the 'knobby ends' were in fact its head and dorsal fin [Fig. 93A].
>
> We never missed a chance in those days to do a bit of anti-submarine practice, and it at once struck me that here was a good target; so I turned to the 1st. lieutenant, Lieutenant-Commander Charles M. Wray R.N.R., and told him to

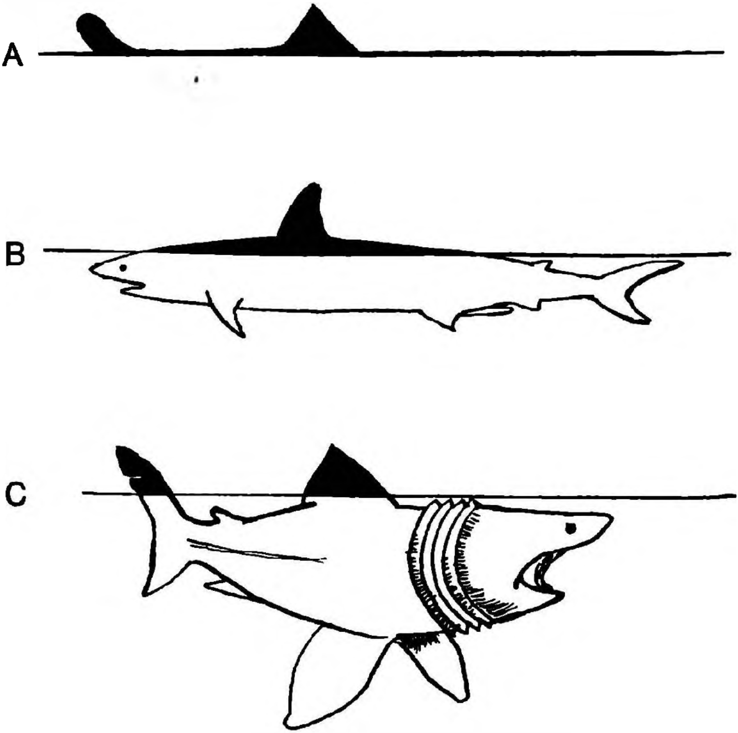
> get our three 6-pounder guns' crews up, so that each one in turn should have a run ...
>
> Before taking the liberty of using the stranger as a target, however, I thought it would be a good thing to have a closer look at it, so told Lieutenant Harris, the navigator, to turn the ship round and head towards it. In due course we approached our object end on, and when we were about a cable from it, it quietly moved out of our way, and we passed it about thirty yards off on our starboard side, getting a very good view of it while doing so.
>
> The head was about the shape of, but somewhat larger than that of, a cow, though with no observable protrusions such as horns or ears, and was black, except for the front of the face, which could be clearly seen to have a strip of whitish flesh, very like a cow has, between its nostrils. As we passed, the head raised itself two or three times, apparently to get a good look at the ship. From the back of the head to the dorsal fin no part of the creature showed above water, but the top edge of the neck was just level with the surface, and its snake-like movements could be clearly seen. [It curved to almost a semi-circle as the creature moved its head round as if to follow us with its eyes, he later told R. T. Gould.]
>
> The dorsal fin appeared like a black triangle, and when the creature was end on, this fin was seen to be very thin and apparently flabby, as the upper part turned over sometimes like the top of a terrier's ear when cocked. The fin was estimated to be about four feet high when in the position highest out of the water.
>
> I was anxious to get as good an estimate as possible of the length of the neck, *i.e.* the distance from the head to the fin, so asked the 1st. lieutenant, the navigator and the officer of the watch each to note, as I did, the length, and we compared with following results:
>
> 1st. Lieutenant.—'The length of one of our boats' (28 ft.).
> Navigator.—'Not less than fifteen feet.'
> Officer of the Watch.—'Length of one of our boats.'
> Myself.—'Twenty feet.'
>
> From which it may fairly be assumed that the true length of the neck was probably not less than twenty feet; and, assuming that the dorsal fin would be just behind the junction of neck and body, the total length of the creature would be about 60 feet.

This estimate is only valid if the creature had a long tail as Dean seems to have assumed, with little justification, that it had.

> The creature did not seem to be in the least alarmed by the presence of the ship but continued to bask on the surface, now sinking down till only the tip of its nose and fin were visible, and anon rising again till the whole head and the fin to a height of four feet were above water.
>
> The ship was steaming at twelve knots all the time, so the creature was soon 1000 yards astern, and we then turned round, and I gave the order, when the range was approximately 1200 yards, for the first gun's crew to fire five rounds rapid.

The second shot of the third salvo hit the poor inoffensive beast. For three seconds it thrashed in agony. Then it lay still and sank.

This cruel sport and senseless massacre was duly revenged two or three days later when a U-boat torpedoed and sank the *Hilary*. Captain Dean and his crew escaped in the lifeboats and told the story of their encounter in *Herbert Strang's Annual* for 1920. R. T. Gould subsequently checked the details of it with Captain Dean, questioning him carefully, and making quite certain that it was not some known animal (such as a basking shark) as some people had suggested. To this end he sent him a sketch comparing Dean's animal with a basking shark (Fig 93B). But Dean, after answering as best he could some questions about the animal's neck, replied, 'It was most certainly not a shark.'



93. The *Hilary* sea-serpent, 1917: A. after Captain Dean; B. R. T. Gould's comparative drawing of a basking shark, which Gavin Maxwell considered absurd and for which he would substitute C

Nevertheless Gavin Maxwell, in his book about shark-fishing, *Harpoon at a Venture* (1955), thinks that it was. He very rightly takes exception to Gould's quite fanciful drawing of a shark, and shows that with a very slight change Dean's silhouette can be made to agree with what a basking shark usually shows above water, the head of Dean's monster being the top of the shark's tail (Fig. 93c). So far so good, but then he adds: 'nor in his lengthy description can I see anything but my old friend the Basking Shark'. I cannot help wondering whether Maxwell really read this description. For it is not a case of comparing silhouettes, but of a three-dimensional animal watched for some time from several points of view, and I doubt whether in all his shark-fishing days Maxwell ever saw a basking shark with a tail the shape of a cow's head 'which could be clearly seen to have a strip of whitish flesh, very like a cow has, between its nostrils', or one that could swim backwards all the time that it was being watched.

The *Hilary* monster, in fact, seems to be our old friend the New England sea-serpent, caught once again basking on the surface.

I should hasten to add that Gavin Maxwell is far from suggesting that *all* sea-serpent sightings are due to basking sharks being poorly observed. Far from it, he has an admirably open mind, not only about unknown animals, but also about the maximum sizes of known ones, and has himself put on record some interesting sightings, two of which I have already quoted. A third must be inserted here, since it took place in 1917 according to Ronald and Harry Macdonald, the sons of the principal witness.

Their father was in a boat at the mouth of Loch Brittle on a fine summer's day when the animal passed, travelling north at 5 knots, a mile to seaward:

> It appeared as a high column, said to be a great deal higher than the object Sandy had seen in Loch Scavaig,[1] and light flashed at the top of the column as though a small head were being turned from side to side. There was a considerable commotion of water astern of it, but no other portion of the body was visible above the surface. It submerged slowly until nothing was left showing above the sea, and it seemed to descend vertically and without flexion.

This time we seem to have the long-necked sea-serpent again.

We must return to the German lines to find a new report on the web-footed crocodile. Several days after Forstner's account had been published in the *Deutsche Allgemeine Zeitung* in 1933, another U-boat commander, Werner Löwisch, told the *Bremer Nachrichten* that at ten o'clock on the evening of 28 July 1918 he and another member of the crew of *U 109* had seen in the North Sea an animal which had 'a long head, jaws like a crocodile's and legs with very definite feet'. It was about 100 feet long.

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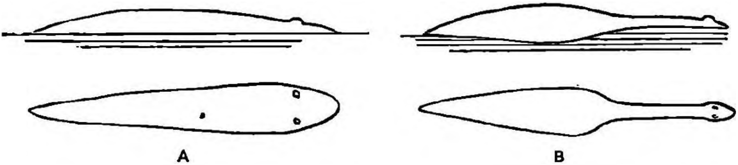
[1] Described above on page 371.

Meanwhile neutrals were seeing yet another kind of sea monster. A Dutch sailor, who gives no more than his initials, P. W., saw one on 22 July 1916 about 400 miles north of Surinam in latitude 10° 54′ N., longitude 56° 25′ W. At 50 yards from the ship it looked like a long tree, floating on the surface. Its colour was light grey, and 'its diameter must have been about 2 feet at its greatest thickness, and its length (difficult to judge) about 70 to 80 feet'. But from his sketch the width seems to have been very much greater. He also says, 'Where the thickness was at its maximum, on what one could in short call its head, it had a pair of protuberances, which gave the impression of being ears.' After about two minutes there was a sort of vertical movement and the animal sank out of sight.



94. The Guiana sea-serpent, 1916: A. after P. W.; B. as modified by Oudemans

P. W. prudently entitled his article in *Het Nederlandsche Zeewezen*: 'Is this the sea-serpent?' When Dr Oudemans added it to his files he appended his own sketch with the caption 'This is what I think P. W. saw.' The sketch I need hardly say, shows his *Megophias* swimming on the surface.

The learned doctor was certainly consistent, but he had no business to alter the sketch in this way. It is all very well for an expert to interpret what a witness has seen, but he should not contradict it like this. In fact the animal P. W. saw certainly did not have a long neck, or even a neck at all. It could well have been some kind of whale without a dorsal fin, of which there are a few rare species. But which? The manuals say that Right Whales are not found in the tropics and the Grey Whale (*Eschrichtius*), which may reach a length of 50 feet, and the shape and colour of which agrees perfectly with P. W.'s description, is found only in the Pacific. But there is good reason to think the Grey Whale lived in the North Atlantic during the Ice Age, and it is not improbable there may be a few schools left. In 1890 this whale was thought to be totally extinct, and it was not until 1911 that Roy Chapman Andrews discovered large numbers of them off the coast of Korea. Moreover Moore and Clark showed in 1963 that sometimes Southern Right Whales (*Eubalaena australis*) might go as far as the Gulf of Mexico. As their skin may be covered with white spots due to parasites, they might look grey from a distance.

The sea-serpent described in 1917 by three members of the crew of the Dutch government steamer *Hazenwind* was hardly any better.

In a letter dated 28 November 1917 to the Chief Inspector of Navigation at Weltevreden in Java, the commander, H. Kievit, tells how on the 24th the ship was in the Macassar Strait between Borneo and Celebes, and at half-past two was in latitude 0° 10′ S., longitude 118° 5′ E., when Oesman, the *jurumudi* or native pilot, saw what he thought was a snake 35 yards to starboard. It was dirty white and had a longitudinal red line on its head. At the sight of the ship it dived, and it could be seen swimming under water 15 yards from the ship. It undulated in a horizontal plane.

As soon as he saw it Oesman shouted to the third pilot, G. E. Gertmans, thus also attracting the attention of Amat, the look-out, who ran to the rail and saw the animal's head under water. The red line was 1 inch wide and 5 inches long. When Gertmans reached the side he could only see the pale shape of the wriggling 'snake'.

Oesman said it was 70 feet long and 2 feet 6 inches thick, Amat 50 feet long and 2 feet thick and Gertmans 65 to 80 feet long, and 3 feet thick.

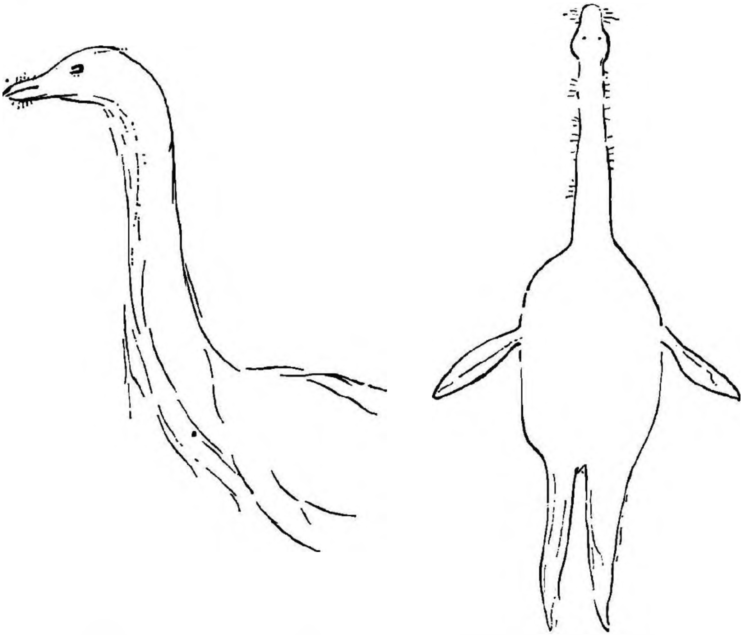
Allowing for exaggeration and the distortion when something is seen under water, it could well have been only about 40 feet long. There is no doubt what it was. The whitish colour, the red line on its head that was no doubt a fiery crest, its shape and horizontal undulation, all betray an oarfish.

We now return to times of peace. In 1919 J. Mackintosh Bell, a Scottish lawyer, or Writer to the Signet, took a holiday, now that he was demobilized, as one of the crew in an Orkney cod-fishing boat, as he had done before the war. On the first day of his holiday, around 5 August, they went out at 9.30 in the morning to lift lobster creels between Brims Ness and Tor Ness and to fish for cod. On the way there his friends said,

'We wonder if we will see that sea-monster which we often see, and perhaps you will be able to tell us what it is.'

After they had got in some of the creels and were moving off to another, one of the fisherman quietly said, 'There he is.'

> I looked [he told R. T. Gould] and sure enough about 25–30 yards from the boat a long neck as thick as an elephant's fore leg, all rough-looking like an elephant's hide, was sticking up. On top of this was the head which was much smaller in proportion, but of same colour. The head was like that of a dog, coming sharp to the nose. The eye was black and small, and the whiskers were black. The neck, I should say, stuck about 5–6 ft., possibly more, out of the water [Fig. 95, left].
>
> The animal was very shy, and kept pushing its head up then pulling it down, but never going quite out of sight. The body I could not then see. Then it disappeared, and I said 'If it comes again I'll take a snapshot of it.' Sure enough it did come and I took as I thought a snap of it, but on looking at the camera shutter, I



95. The Hoy sea-serpent, 1919, side view and as seen through the clear water, after J. Mackintosh Bell

found it had not closed owing to its being swollen, so I did not get a photo. I then said 'I'll shoot it' (with my .303 rifle) but the skipper would not hear of it in case I wounded it, and it might attack us.

It disappeared, and as was its custom swam close alongside the boat about 10 feet down [Fig. 95, right]. We all saw it plainly, my friends remarking that they had seen it many times swimming just the same way after it had shown itself on the surface. My friends told me that they had seen it the year before just about the same place. It was a common occurrence, so they said.

That year (1919) was the last of several years in which they saw it annually. It did not show itself again for two or three years, and then it was only seen once. As to its body, it was, seen below the water, dark brown, getting slightly lighter as it got to the outer edge, then at the edge appeared to be almost grey. It had two paddles or fins on its sides and two at its stern. My friends thought it would weigh 2 or 3 tons, some thinking 4 to 6.[1] Not only my friends, but others, lobster fishing, got many chances of seeing it ...

---

[1] A 20-foot sea-elephant (i.e. one of about the same length) would weigh 3½ to 4 tons.

In reply to Gould's questionnaire Bell gave the following further details:

> Dimensions. *Neck*, so far as seen, say 6–7 feet. *Body* never seen when neck straight up, but just covered by the water. You could detect the paddles causing the water to ripple. When under water, swimming, the body, I think, to the end of the tail flappers would be about 12 ft. long—and, if the neck were stretched to say 8 ft., the neck and body 18–20 ft. long. The skipper of the boat remarked that sometimes the top of the head, when seen from a boat vertically, was a bright red. *Neck* thickness say 1 foot diameter· *Head* very like a black retriever—say 6″ long by 4″ broad. Whiskers black and short. *Circumference* of body say 10–11 feet, but this I am not sure of, as I never saw all round it, but it would be 4–5 ft. across the back.

All this is very sober and precise. And indeed one could not wish for better conditions in which to observe an unknown sea-animal than those which Mr Mackintosh Bell enjoyed. What he saw seems to be a sort of huge seal or sea-lion with a very long neck. It is not as big as the largest sea-elephant ever measured, 22 feet, and it is certainly not an animal of that kind. Not only are sea-elephants unknown outside the southern hemisphere (*Mirounga leonina*) or the Pacific coast of North America (*Mirounga angustirostris*), but also, even stretched right out, their necks are never at all narrow or long. This is an unknown kind of pinniped, clearly the same as the little-headed giant sea-lion seen by Conder's men in Tasmania.

Once again we have established that there is, as Oudemans said, a big swan-necked sea-lion in the sea. But, unlike his *Megophias*, it does not have a very long tail. It has no tail at all.

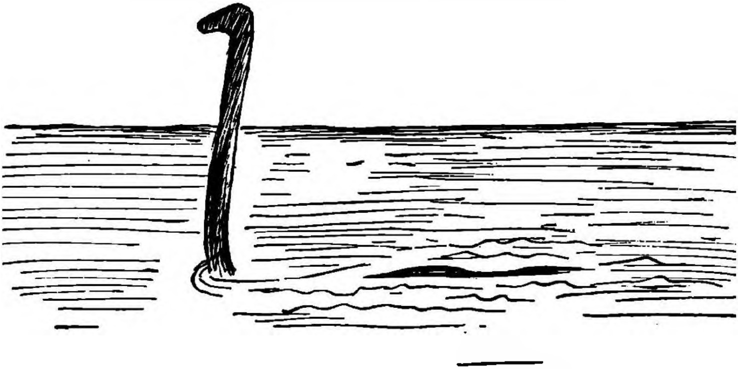
It is already very clear that the sea-serpent has many very different prototypes. *Megophias* has taken some features from an unknown long-necked sea-lion, but its long tail seems to come from another sea-serpent—or perhaps several others—and so does its vast size.

If Mackintosh Bell's animal, which was about 18 feet long without the hind flippers, belongs to the same species that has given rise to the legend of the sea-serpent, it must have been a very young one like the Tasmanian specimen. According to the reports collected and arranged by Oudemans, sea-serpents are 10 to 120 feet long at the very maximum, *not including the tail*. It is true that he admits that the larger dimensions may be exaggerated, but even so, if it is a pinniped, the discrepancy in size is far too great. I do not think there is any species of pinniped in which a fully grown adult male is much more than three times the size of a new-born one. Therefore, if a new-born *Megophias* is 10 or 12 feet long from the tip of the nose to the end of the body, it would not be more than 30 to 36 feet long when fully grown. And 36 feet is a very great deal less than 120.

As there is no doubt that serpentine animals much longer than 36 feet have been seen in the sea, it shows once again that *Megophias* is founded on several very different animals.

R. T. Gould is also responsible for publishing the next report. After he had written an article about the sea-serpent in the *Evening News* in July 1929 he received a letter from Thomas A. R. Muir who had been third officer on the Royal Mail Steam Packet Company's *Tyne* in 1920 on a voyage between Casablanca and Rio de Janeiro. On 20 April in latitude 1° 30′ N., longitude 28° 0′ W near St Paul's Rocks, a mass of volcanic rocks 500 miles off the South American coast, Mr Muir saw something like a spar sticking out of the water. Through binoculars he saw it was moving in the same direction as the ship at about the same speed (12 knots). At the top was a moving head.

> It was clearly a creature of some description, and the head, like an umbrella handle, turned and looked at the ship, then the creature closed in towards us to a distance of about 400 yards. It kept speed with the ship, and appeared to be looking at us. For roughly five minutes it travelled parallel with us, then the neck curved over like a swan, and it dived out of sight.
>
> At the time I wondered what the body was like, there being considerable spray behind the neck, with flashes of dark body like a whale; but I was not sure whether it was a long sinuous body like a snake, or round like a whale.

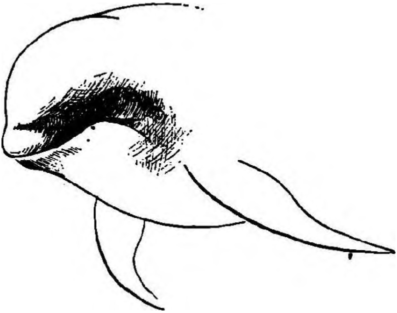


96. The *Tyne* sea-serpent, 1920, after Thomas Muir

Mr Muir added an excellent little sketch, and said that the head stuck 30 to 35 feet out of the water. The second officer also saw the creature, but Muir's suggestion that it be entered in the log was 'refused on the grounds that we should have our wine bills stopped'.

At the beginning of 1921 there was news that a sea-serpent had been washed up on Jehu Sands ten to twelve miles from Bombay. It was not a rotting corpse but a live animal which was still giving despairing cries forty-eight hours later. The British papers reported that it was 25 feet long and that its mouth, at least 3 feet deep, was lined with rows of formidable teeth: it could easily have swallowed three men in one mouthful. Its skin, through which the ribs could be seen, was black. Its eyes, like an elephant's, rolled in their sockets in a way that seemed to bode no good. Its head was rather like a man's.

In fact none of this is like any kind of sea-serpent. On the other hand it is not a bad description of one of those huge black dolphins with big teeth, known as Blackfish or Pilot-whales (*Globicephalus*). Its strangely rounded forehead makes its head look something like a man's. And there is a species, *Globicephalus indicus*, in the Indian Ocean.



97. Head of Blackfish (*Globicephalus*)

Once again we learn of a sea-serpent—an unusually serpentine one this time—from a letter to Gould. The writer was the sole witness, and, as no one could corroborate his story, he asked for his name to be withheld, 'an attitude of mind,' says Gould, 'which I deplore—but with which, I must say, I sympathise.'

While sailing a small boat in Back Bay, Bombay, in October 1921, the writer of the letter saw something very like Dr Matheson's picture (Fig. 78).

> The upright neck stood some 10 feet, I should say, perpendicularly from the sea surface, tapering very slightly towards the head. The diameter of this column appeared to be about 18 inches near the water. It seemed to be covered with large scales and, in colour, was a light olive green at the back, shading off to a dirty yellow in front. The head was like that of a gigantic tortoise, or turtle, but any body to correspond with that head and neck would be, at least, fifty feet long, I should judge.

This judgment is sound only if it were really a serpent. If its body were thicker, if it were a plesiosaur or a turtle as its head suggested, its body could be no more than 15 feet long and still be able to support 10 feet of neck. A 25-foot turtle would, of course, be an unknown animal, except perhaps to palaeontologists. I shall return to this later.

If there are really unknown giant turtles in the sea, or thalattosuchians or long-necked sea-lions, it seems probable they must come to land to lay their eggs or give birth to their young. All known turtles lay their eggs in sand on the beach, and sea crocodiles seem to do the same. Likewise all known pinnipeds normally give birth on dry land.

This is not absolutely necessary. Certain reptiles in the past, ichthyosaurs for instance, were viviparous and gave birth at sea like whales, and the sea-otters still do likewise, even though anatomically they are less adapted to sea life than seals and sea-lions. It is easy to see that so-called sea-serpents related to turtles, crocodiles or pinnipeds might be much more specialized than their cousins for an exclusively marine life.

All the same it seems that at least one type of sea-serpent can venture on land: the tailless *Megophias*. We now have another report to add to the Tasmanian one. Mrs Hilda Bromley gave it to Tim Dinsdale, and it appears in his book *Loch Ness Monster* (1961). In 1923 Mrs Bromley, her husband, her two young sons and their governess were staying with Sir Percival and Lady Perry on Herm, one of the Channel Islands. There was a great rise and fall of tide there, and one day the guests decided to see how far they could go at low tide. Sir Percival advised them to take a local seaman with them, and fourteen people set out, each armed with a stout stick with a hook at the end, to catch lobsters.

> After walking and running for some time, we came to a large pool—but what held us spellbound were marks on the seaweed as though something huge had come out of the pool and had dragged itself over the seaweed covered sand away to our right—we one and all turned, and followed these drag marks, (if I can remember rightly) for some considerable distance, and then we came to an enormous pool—far larger than the first one, into which the drag marks 5–6 ft. in width, disappeared! We all stood amazed, 14 of us, what could it be?
>
> Then slowly, away in the middle of the pool, a large head appeared and a huge neck—but we did not see the body; there it stayed with its great black eyes gazing at us without fear—then slowly it sank back into the water. It was evident it had never seen a human being before. We joined hands and all stepped into the pool, to see if we could disturb the creature, but it was too large and deep for us to make any real impression.

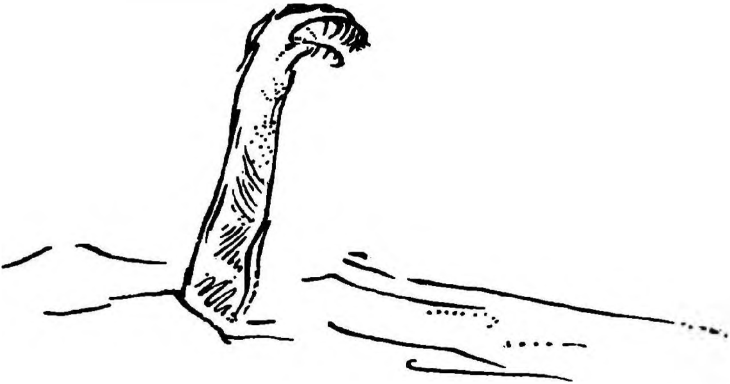
Just then Bannister, the local seaman, said that the tide was coming in fast, and they had better go back. The guests would have liked to have stayed in the hope of seeing the monster again, but it would have been folly to do so.

From information given to Tim Dinsdale later, the animal had black skin and a thick neck, 3 to 4 feet long, and a wide mouth like a sea-elephant's. It was, in short, the tailless *Megophias* which we are now getting to know so well.

The last of these British reports from just after the Great War was one of those collected by Gould and tells of a sea-serpent in the Thames Estuary The area known as the Black Deep, where it was seen, had been closed to shipping all through the war, and was indeed still closed in 1923 when the creature was seen. These waters had thus been closed to shipping for eight years, when H.M.S. *Kellett* went there to survey them. As Captain F. D. B. Haselfoot, one of the witnesses, remarked, 'Its waters were thus entirely secluded for the private activities of any sea-monster!'

The witnesses unfortunately made no notes at the time, so some of the details are vague. It happened in summer, probably August, at about 9 o'clock in the morning. Commander R. M. Southern twice saw a long serpentine neck appear out of the water some 200 yards from the ship, rising some 6 or 7 feet above the surface. Each time it remained visible for four or five seconds. Commander Southern could not see a distinct head, but Captain Haselfoot was able to make it out and to do a little sketch. He estimated its height at 8 to 10 feet.

These British witnesses agree very closely, at least as regards the outlines of what they saw. It is a long-necked beast raising something like a periscope or walking-stick above the surface. Of course it is difficult to reconcile Bell's swan-necked seal with the monster, coloured and scaled like a reptile, described by Gould's anonymous correspondent—but this very anonymity makes the report somewhat untrustworthy.

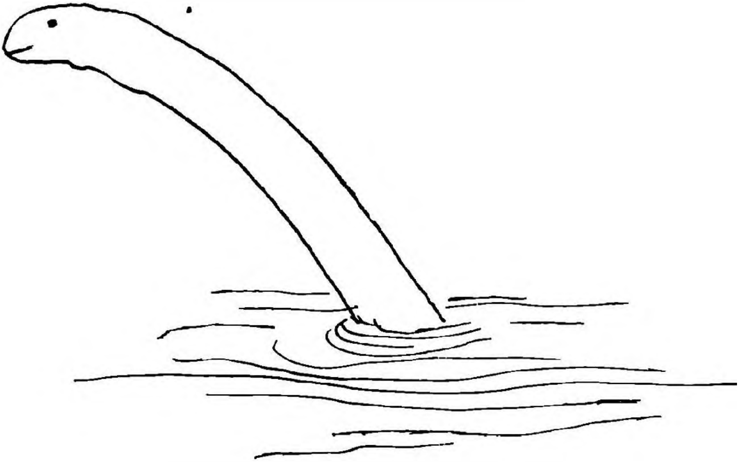


98. The *Kellett* sea-serpent, 1923, after Captain Haselfoot

There are no more British reports for some years, but the French and Dutch reports from 1922 to 1928 largely make up for them. Dutch seamen provide five very matter-of-fact reports noted in their ships' logs, when in hot, and usually tropical, parts of the world.

First there is the long-necked animal seen on 31 October 1922 by the second officer of the steamer *Bali*, in latitude 7° 23′ N. and longitude 77° 52′ E. in the Gulf of Mannar between India and Ceylon. Here is how the fourth officer, P. Kruyt, described it in the log:

> At about 4.30, about half a mile to port, the water began to be very disturbed until a little later there appeared in the same place an animal with a head and neck recalling a giraffe's but larger. The monster remained visible for about two minutes, and then dived back into the water head first. After which nothing was to be seen except that there were many birds above the place where the beast had disappeared. The serpent was about the same thickness everywhere, of circular section, the head ending in a blunt point. Its thickness was reckoned at about 18 inches, and the visible part about 15 feet long. It was grey-green in colour.



99. The *Bali* sea-serpent, 1922, after P. Kruyt

Then comes the much bigger animal, momentarily glimpsed by two officers of the steamer *Mapia* in the India Ocean, some way off the Somalia coast, in latitude 11° 50′ N., longitude 57° 37′ E. The fourth officer, H. J. Van Nouhuys, recorded it thus·

> 1923. 11 February at 4.15 p.m., I was on the starboard deck with the second officer, A. de Wild, when we were startled by a violent blow on the water. It was

> so close to the port side of the ship that we could not see what it was nor exactly where it had happened. When we dashed to port we heard another violent splash (louder even than that made by a dolphin leaping out of the water) and we saw, some 30 yards away, a colossal sea-animal disappearing below the surface. It was about 6 feet thick, cylindrical, and as far as we could see it was 8 feet out of the water. It was shining, half light grey and half brown.

Third comes the testimony of five members of the crew of the tanker *India*, which plied between Tampico in the Gulf of Mexico and Los Angeles, passing round the Horn. On 30 October 1923 in a most unusual area, off the Pacific coast of Costa Rica, in latitude 9° 23′ N., longitude 86° 26′ W., the incident occurred which Captain F. Van de Biesen described thus:

> Suddenly to port, and almost abeam, there rose obliquely out of the water,[1] at least 300 yards away, a gigantic pillar, 25 to 35 feet long and of a good thickness which we reckoned must be at least 3 feet and perhaps as much as 6.
>
> The thing fell back into the water with a violent splash, greater even than the commotion made by a whale. After which it must have appeared again momentarily for we (5 people) were aware for several minutes of the effects of the spout of water that it raised.
>
> My first impression was that it was a gigantic garfish,[2] but with a blunter head. The rear end was not visible, but the diameter of the animal was greater than that of one of our masts. Its colour was much lighter than a whale's.
>
> While four of the witnesses saw no sign of 'blowing', the first pilot maintains that it 'blew'. But I watched carefully and could see no 'blowing'.
>
> It was not a whale's tail, nor anything of that kind, but the front part of an animal more or less circular in section, on which there were no large excrescences in the shape of fins.

Fourthly[3] we have the animal with only a moderately long neck, which Captain P. de Haan of the steamer *Bawean* saw on 23 July 1925 just after dropping the Brisbane pilot and setting out for Sydney.

> We were suddenly aware of a violent disturbance in the water to starboard. A little later a long black body, estimated at 25 feet long, emerged at an angle of 45°, and then fell back into the water with a loud splash, making the sort of waves we had already seen. It reappeared again, closer to us, four times; the body, sticking out obliquely, which was about 5 feet thick and was more or less cylindrical, seemed to have a long head, with a beak and eye, and rounded at the end. When the animal fell back, a fin about 12 feet long rose at an angle on the right side behind the head, and the body curved to this side when it fell. At the same time

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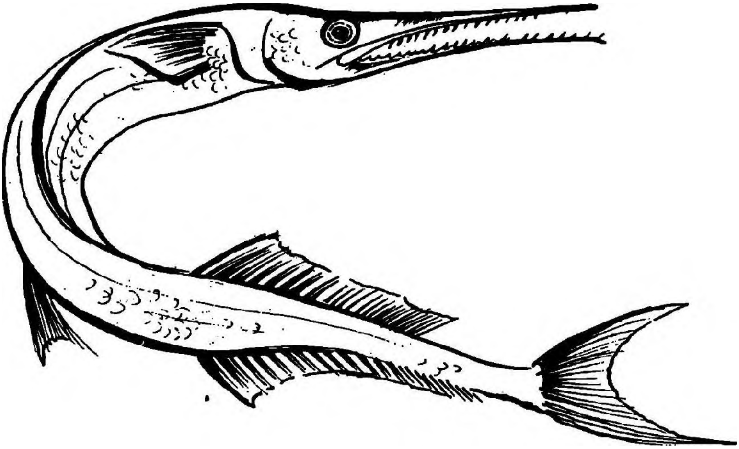
[1] At an angle of 30°' according to another report of the captain's.

[2] The Garfish (*Belone bellone*) is a very slender long-beaked sea-fish, from 18 inches to nearly 3 feet long

[3] Logically I should insert here the creature seen on 3 May 1925 off Mauritania by the Dutch steamer *Alcyone*. But this fish, 15 feet long and a foot high, described as a red line wriggling like an eel on the surface, is obviously an oarfish.



100. Garfish

there rose out of the water, several feet away, a sort of tail, much thinner than the front part. On the top of the head the skin was black and pimpled, while underneath it was lighter and smooth. The erected 'fin' was much lighter still: almost white with black patches. Its breath was very clearly seen and heard. To my great regret nobody had a camera handy, and it was very difficult to focus glasses on the animal, as we did not know exactly where it would next appear. The shortest distance at which it appeared was about 350 yards.

That is what I saw, and it agrees fairly well with the officer of the watch's account, except that the so-called 'fin' seemed to him to be the jaw of an open mouth. This, however, does not seem likely to me, for I saw it appear head on, and the jaw could hardly have been stuck on the side. I must admit that a single fin on the right side only, seems to me equally unlikely.[1]

Fifthly and lastly there is the report of J. R. A. Swaan, first pilot of the steamer *Bengkalis,* and countersigned by her captain, J. F. Straakenbroek. This concerns a string-of-buoys sea-serpent seen on 15 August 1928 west of Sumatra, in latitude 2° 25′ N., longitude 95° 47′ E. At 1 p.m. an object was seen some 400 yards on the starboard bow, looking like a big tree-trunk with only parts of it out of the water. There was a disturbance around it, as if it were surrounded by a shoal of fish. But when the ship came closer:

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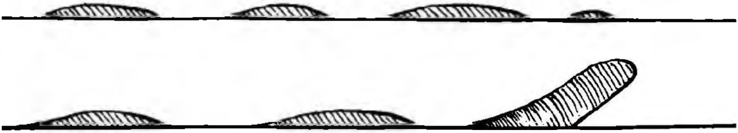
[1] The other fin could well have been held so close to the left side that it was not visible.

> We saw through binoculars that it was not a tree-trunk but a living creature which moved, and of which some four portions of the body (probably the back) were above water (see diagram). These portions did not look like fins: they shone in the sun, they were smooth and not very arched, and their colour was very like that of a seal.



101. Two views of the *Bengkalis* sea-serpent, 1928, after J. R. A. Swaan

> Suddenly there rose out of the water a part which looked like a big round branch, about 2 feet in diameter and 6 feet long and making an angle of 30° with the sea; the end was rounded (see diagram). Slowly this part dived under the water again, while the sea became very disturbed. Nothing in particular could be seen on this portion out of the water—nothing the shape of eyes or anything similar—and the colour was the same as that of the other parts. The distance by then was 250 yards.
>
> The quartermaster, who was from the British East Indies and was at the helm, also saw what had appeared in the sea, without my drawing his attention to it, and cried:
>
> '*Barra machli* (big fish).'

These Dutch reports are all fairly similar and all concern an animal which raises a cylindrical neck above the surface and splashes it down again. They look alike and behave alike, but only the *Bali* animal has a long thin neck, while three of the others have a thick and only moderately long one. The length of the *India* animal's neck cannot be settled, for either it was all neck, or it had no neck at all, and could thus be some kind of giant eel.

The French reports from 1922 to 1926, which like the Dutch help to make up for the lack of British ones, almost all come from Oceania in the South Pacific. It looks at first as if the sea-serpents have been driven away from the North Atlantic by the increase in shipping and have migrated to the more peaceful waters of the Pacific. But this is an illusion. Animals do not migrate in this way, as a rule, and no doubt the real reason was the increasing exploration of the Pacific and greater number of possible observers.

Apart from the sightings near Norfolk Island in 1870 and off New Zealand in 1891 and from 1897 to 1899, there have hitherto been little but vague rumours from the whole of the vast South Pacific.[1] There is, however, one exception in the form of a British sighting reported by Reginald Pound in 1924, but certainly occurring earlier.

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[1] Apart from the incredible *moha-moha* all the Australian reports come from the Indian Ocean side.

Ernest Davies, a British man who lived for some years in the Tuamotus as a trader and had been described by the press as 'the loneliest Briton in the world', was sitting smoking on the poop of the schooner *Noidore* one evening when he heard a rippling noise some 40 yards away:

> Gazing in that direction [he said], I saw a queer-looking black form approaching the vessel. It came up in a leisurely sort of way and, after rubbing itself against our side, reared itself almost to the height of the main deck. I was never so surprised, or more scared in my life. The head of this weird visitant was shaped not unlike that of a horse; it had greenish eyes, and an expression that to me was malignant in the extreme. The three natives, who had spotted the thing as soon as it first appeared, were stiff with fright ... The monster, sea-serpent or whatever you like to call it, surveyed us for a moment or two, and then dropped back into the water and leisurely went off.
>
> The natives were not in a fit state to discuss the matter that night. They believed it was an evil spirit. But old natives to whom I related the incident the next morning were not particularly interested. I then discovered that the sea-serpent, if such it was, is fairly often seen in those parts. A short time afterwards I heard from a reliable source that a sea-serpent had been cast up by a tidal wave on a reef some distance off. It measured fifty-three feet in length, and had a girth of twelve feet.

I have not been able to find out anything about this washed-up sea-serpent. But, considering how many carcases have proved to be known whales or sharks, little has probably been lost.

The next sea-serpents from Oceania were revealed at a meeting of the Zoological Society of France on 27 November 1923 when the following passage from a letter from M. Hérubel, a demonstrator at the Sorbonne, was read:

> During 1923 the 'great sea-serpent' has been reported twice:
>
> 1. On 28 June, at 16.00 hours, between the Loyalty Islands and New Caledonia, by the captain and crew of S.S. *Pacifique* of the Messageries Maritimes. The animal appeared suddenly 60 yards from the boat.
>
> 2. On 22 September, at 17.00 hours, in the main harbour of Nouméa by some fishermen from Freycinet Isle.
>
> The two reports agree on the following points: the great sea-serpent measures 100 to 130 feet in length; it throws up water noisily; its head recalls a horse's but has a sort of crest; its colour is very dark mahogany. These details are taken from a letter from an agent of the Maritime and Colonial League at Nouméa, dated 8 October 1923.

I have been able to find exactly what happened (not on the 28th but on the

19th) from an interview by A. Fraysse with Captain Desbordes of the *Pacifique* and published in the Nouméa newspaper, *La France Australe*. The animal had been seen not by the captain himself, but by the radio officer, M. Martin, whose account is as follows:

> On 19 June we had left Port-Vila (New Hebrides) for Nouméa and had just rounded Cap les Pins on the south of Lifou Island. It was about four o'clock in the afternoon, and the weather was magnificent. About 300 yards away at 30° on the starboard bow, there was a considerable movement in the sea. I saw a strange animal raise its head, neck and beginning of its body out of the water and stand straight up like an erect snake and then fall back, hitting the sea, and raising a great plume of water. This happened in a flash. Near me Seamen Picot, Cardot, Cointreau and Viale were working at painting a boat. 'Did you see that animal?' I asked them. At the same moment it emerged a second time, and we all five saw it very clearly, but this time it did not dive with a splash but sank slowly down.

Martin said that its colour was that of 'a new cork', but he could not be certain about its shape, because its appearances were so brief. In any case it was not in the least like a whale, except perhaps in size.

One of the seamen said the body was huge and long and that the part out of the water was as thick as a boiler-room air-shaft. The head was conical and slightly pointed at the end. The colour was light and rather dirty.

The same journalist, A. Fraysse, gives us the details of what happened on 22 September and also on the 30th.

> On 22 September at about 17.00 hours, a native woman called Fels and a friend were returning to Gadji in a boat with a fish-well, and were near Abel point when they heard behind them *a bang like a rifle-shot*.
>
> Great was their alarm when they turned round and saw about 60 yards from them a strange animal which gave a *prolonged whistle*, and shot a *jet of vapour*, and then a spout of water, vertically into the air to a great height.
>
> The animal, whose head stuck out about 30 feet, looked like a sea horse with a crest running well down its back. Its colour was dark mahogany, almost black.
>
> The monster made a great wash and undulated on the surface. It rose up and hit the sea with a terrible noise, and then raised itself—head and tail—high above the water again ... The animal, which seemed capable of great speed, appeared five times.

The two Kanaka women were quite terrified and sought the safety of Freycinet Isle, but before they reached it they saw the fearsome animal appear three times more and make for Nouméa harbour. Their account was confirmed by a retired policeman called Millot, who was a quarantine officer on Freycinet Isle and gave *La France Australe* this report:

> On 22 September about 16.00 hours I was in my garden when I saw a jet of water in the direction of Lantanas Point. *This jet seemed to me to be as high as the hill overlooking that point;* then another not so high jet, further west.

> Three times in several minutes I thought I saw several big animals, bigger than porpoises; then I unfortunately lost sight of these apparitions when a *sharp and tremendous* noise, followed by another longer one, made me resume my watch.
>
> I saw several 'bits' bigger than a sperm-whale, then a black mass: the tail then formed a screen about 6 feet high by 12 feet long.
>
> The noise and the appearances became more frequent and clearer, the black colour remaining.
>
> The animal came between Freycinet, Goat Island and Ducos peninsula. The clearest picture I had of it was of three successive domes, several feet high, which seemed to *take up more room than its* [?*my*] *house.*
>
> I was a mile away; these three bits seemed to me to be three whales following one another. I cannot describe *this monster* more exactly, it seemed to me more fish than snake.
>
> The length is difficult to judge. The three parts which I saw almost touching measured more than 60 feet and I guessed the animal must extend under water (unless it was a family in Indian file).
>
> I did not see the head; but at each appearance, I heard this tremendous noise like the trumpeting of an elephant, followed by the sound of the wash like many sheets of metal falling.
>
> It was flat calm.

The following Sunday, 30 September, the monster appeared again, but in a different place, two miles from the port of Nouméa between Maître Isle and Tabou. It was seen there by M. and Mme Bailly and a native called Émile who had all gone to Maître Isle in a motor-boat to fish.

Bailly told Fraysse that several times between 8 and 10 in the morning, in splendid weather, the animal had raised its body vertically like a mast (like a lighthouse said Émile). Sometimes two branches were held up at the same time like the head and tail of the same animal. These two branches smashed down in opposite directions and in line with one another, making a great noise.

Mme Bailly confirmed her husband's account in every detail and added that the beast 'frequently spouted a jet of vapour'.

This last detail together with the description of two branches rising together made some experts think that the beast was a giant squid, which lifted two long tentacles above the surface at times and squirted up water or water vapour with its locomotor siphon at others. This explanation is perfectly sound, but it does not explain the native women's good description of a maned sea-serpent whose appearance we now know well, and in fact I think the only explanation of these events is a homeric duel between what I propose to call a merhorse and an *Architeuthis*. This would explain the squid's strange and noisy behaviour, for it was clearly in difficulties. Moreover we shall find later that the two combatants were reputed in the South Pacific to be natural enemies.

This affair shows that sea-serpents, apparently of a well-known type, are found in the Antipodes. It also shows that these much-discredited animals were still taken seriously by French scientists as at the time of the Along Bay affair. A few years earlier, in 1922, E. L. Bouvier, member of the Institut de France, wrote a very favourable article on the sea-serpent. He did not believe it could be a plesiosaur and preferred the idea of an unknown mammal, without being in complete agreement with Oudemans.

> There is no doubt [he wrote] that one cannot deny the existence of so-called sea-serpents; but why should one insist that these animals are all of the same kind? They are certainly mammals that blow air and water vapour through their nostrils, and it seems reasonable to suppose they belong to the order of Cetacea when they are hairless and have front fins only, and to the order of Pinnipedia when they are furry, have two pairs of flippers, and a head and neck which they can raise out of the water as sea-lions do.[1]

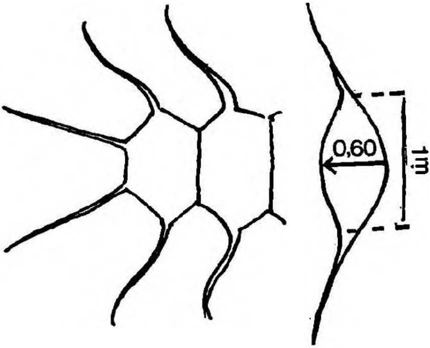
It had been a great step forward when the notion that the sea-serpent was a snake or at least a reptile was abandoned. It is a new step to suggest it might consist of several kinds of mammals in two different orders. And soon the French were to go even further and suggest that some sea-serpents might belong to a different class of animals from anything that anyone had dreamed of.

On 15 September 1921 Dr A. Krempf, Director of the Oceanographic and Fisheries Service of Indo-China, sent a letter from Saigon to Professor Abel Gruvel, Director of the Marine Laboratory at the Museum at Dinard. It was certainly a bombshell.

> Here is some information which although it smacks of the marvellous, cannot fail to interest you. I received it at sea from the coxswain of a Customs launch, a 56-year-old native called Tran Van Con.
>
> 38 years ago (that is to say in 1883, 14 years before Lieutenant Lagrésille's account), this Annamite saw and touched the so-called sea-serpent. Here is his account, faithfully translated: the animal was washed up and dead: it was a carcase in a very advanced state of putrefaction. The head had gone. The body alone was 60 feet long by 3 feet wide.
>
> The animal was formed of successive segments almost all alike one another. Each segment was 2 feet long and 3 feet wide and had a pair of appendages 2 feet 4 inches long.
>
> The teguments were of a remarkable consistency and rang like sheet-metal when hit with a stick. The colour of this tegumentary envelope was dark brown on the dorsal surface and light yellow on the ventral surface.

---

[1] Bouvier spoils his argument somewhat when he adds: 'I am aware that the Cetacea and Pinnipedia are incapable of moving in *vertical undulations*, but one may doubt whether the so-called serpents move in this way.' In fact the importance of this much misunderstood characteristic cannot be too highly stressed.



102. Segments of the *con rit*'s armour, after Dr A. Krempf

> The stench that arose from this prodigious animal was such that even the Annamites would not go near it, and it was decided to tow the remains out to sea and sink them.
>
> The name given to this animal by my informant is *con rit*, or 'millipede'. It is thus, according to its name and from all the description that I have given you, an Arthropod ... unless it is all a dream, and certainly it is very detailed, and as another theory about the sea-serpent can do no harm, I have thought fit to send you this information, but ask you to await further details before doing anything about it.
>
> This event occurred at Hongay in Along Bay 38 years ago, and I had confirmation of it from a 30-year-old Chinese who had heard the tale from his father.

Professor Gruvel left this letter in his files for some years, but in 1924 he was lecturing on the fisheries and marine fauna of Indo-China. And as Dr Krempf was then working with him he was able to clear up some points.

Although Krempf thought the coxswain entirely trustworthy, he checked his story by having Chinese fishermen questioned by the Immigration authorities in Saigon. They also described an animal much like Tran Van Con's: segmented, dark on the back and lighter underneath.

When Krempf was questioning the coxswain about the carapace there happened to be a shell of that strange living fossil, the king-crab, at hand. This animal is like a crab armed with a sword, and its shell is often used as a bailer. Krempf struck it and asked if the sound were like that made by the *con rit*'s tegument. 'Exactly,' replied the coxswain.

As a result Professor Gruvel wrote in his book *L'Indochine*:

> This story, taken literally, obviously leads us a long way from Racovitza's and Oudemans's conclusions; there are however, certain points in common: firstly the length of the body (60 feet without the head): the *dark brown* colour of the back, lighter on the belly; several pairs of limbs along the animal's body, etc. The great difference seems to be in the appearance of the body, smooth according to Oudemans, segmented according to the Annamite's tale. But might not those apparent segments be caused by scales which, held close to the body, might not be seen from a distance and thus seem absolutely smooth?

To support this argument Professor Gruvel cites Gesner's picture of the Norwegian sea-serpent (borrowed from Olaus Magnus) the scales of which 'look just like proper segmentation'. He might also have quoted a footnote of Pontoppidan's, which all the commentators have overlooked, no doubt because it does not agree with the general notion of a sea-serpent:

> Anno 1744 one Dagfind Korsbeck catched, in the parish of Sundelvems on Sundmoer, a monstrous Fish, which many people saw at his house. It's head was almost like the head of a cat; it had four paws, and about the body was a hard shell like a Lobster's. it purred like a cat, and when they put a stick to it, it would snap at it. The peasants looked upon it as a Trold, or ominous Fish, and were afraid to keep it; and, consequently, a few hours later, they threw it into the sea again. According to the description, this might be called a Sea-Armadilla, by which name an American Land-animal is known, nearly of the same shape, excepting that it has a long tail.

Unfortunately we are not told the size of this strangely armoured sea-quadruped, but presumably it must have been fairly small for the fisherman to have taken it home. It remains none the less mysterious and difficult to place zoologically.

Professor Gruvel could also have cited Captain Hope's *Fly* sea-serpent in which 'an appearance of annulations, or ring-like divisions of the body, was distinctly perceptible'.

> There remains [Professor Gruvel went on] the 'millipede's feet' all along the body. We must admit that their presence is harder to explain if we want this animal to preserve its vertebrate characteristics, unless they are vegetable growths, which, flourishing on its body, might be confused with true appendages.
>
> If we look at pictures of the famous Annam dragon, which, as Lieutenant Lagrésille thought, does seem to be merely a 'stylisation' of the Sea-Serpent, we shall see that its body is almost always pictured with scales forming an annulation and with not only two or four appendages on each side of its body, representing true limbs, though somewhat bizarre ones, but also a whole series of other long very flexible appendages like big bristles; the body of this animal is itself terminated by a series of long filaments. Perhaps one may therefore connect Oudemans's and Lagrésille's animal with that of the Annamite coxswain and the description given by the Chinese. The Sea-Serpent could thus be a true snake or a closely-related ancestral form.

This last conclusion hardly follows. Who has ever seen a 'true snake' with legs, and what zoologist has ever suggested that its ancestors had rows of lateral appendages? Gruvel's reasoning is as obscure as the beast itself.

Moreover the dragon of Vietnamese legend is never represented as a snake. In the *Chich-Quai*, the most popular collection of wonderful stories in Vietnam, we learn that in 'the eastern sea' (Gulf of Tongking), there used to live a fabulously long and twisting fish with many feet 'like a centipede'. It attacked fishing-boats, sank them and ate their crews, so Lac-long-Quân, second King of Viet, took pity on his subjects, slew the dragon and cut it to pieces with his sword. These pieces were the legendary origin of the strangely shaped rocks on Cac-Ba island in Along Bay, and the head became a mountain, Câu-Dâu, east of Quâng-Yên.

Once again we have the story of the knight who kills a dragon, the beast's shape varying in different countries, and apparently based on rarely seen animals that are terrifying in size or appearance.

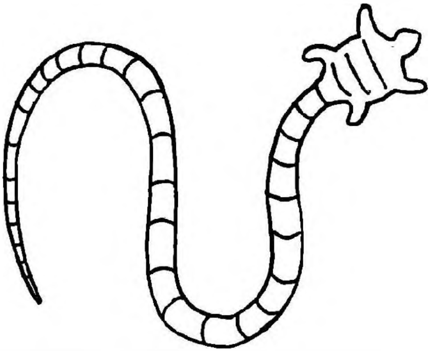
Before the reader grows too contemptuous of these Indo-Chinese fables (and there is no reason to consider Europe as the hub of the world) let us return to the cetacean centipede described by Aelian and Rondelet. It is obvious that this beast described by western writers is the same as the monster of Annamite legend and the bizarre carcase seen by Tran Van Con. The 'multitude of feet' arranged like oars, the 'tail like the tail of a lobster', even the name 'cetacean [i.e. gigantic] centipede' are all found in the Eastern descriptions.

To continue this strange affair in its chronological order: on 14 November 1925 *La Nature* drew its readers' attention to Krempf's account in Gruvel's book, commenting:

> Is the sea-serpent an arthropod, then, or is the apparent annulation due to dermic scales on a vertebrate's body? M. Gruvel asks the question but does not answer it.

Whereupon A. G. L. Jourdan wrote a letter to *La Nature* which he seemed to think would clarify the situation, though in fact it confuses it considerably. Returning from Manila on a calm sea he saw three sea-serpents one after the other in the China Sea, from a ship's prow:

> When we had reached the meridian of a little island called 'Isle of Serpents' [25 miles north-west of Port Arthur] which will be found on any large-scale map, but was too far off for us to see from where we were, I was surprised to see on the surface of the water, hardly immersed, at the very close distance of about 30 yards, an animal looking like a 10-foot snake, with a maximum diameter of 7 to 8 inches, decreasing towards the tail, the body regularly annulated from one end to the other, alternately light yellow and black, the length of each ring being about 4½ to 6 inches. The rather small head was immediately followed by a swelling about 12 to 14 inches in diameter, as thick as the body which followed it, and



103. The Isle of Serpents sea-serpent, 1925, after A. G. L. Jourdan

> with four feet, two each side, recalling the shape of a turtle, but without a shell, striped in yellow and black and with an annulated tail about 10 feet long. I could not see whether this body was round like a snake's, or, as I supposed, slightly flattened.
>
> The animal seemed able to move only slowly, for despite the approach of the ship it was tossed by her wash and disappeared in her wake; a few moments later I saw two other snakes of similar appearance but with the yellow rings darker in colour;[1] on none of them did I see appendages like those mentioned in *La Nature*: as they were further away from the ship than the first one I could not see any other details.

The reader may well wonder why on earth he should *expect* to see appendages, since these snakes have nothing in common with the Indo-Chinese 'giant millipede' except an elongated body. But Jourdan did not think so, for he said:

> Apart from the size, the preceding description seems to correspond fairly exactly with Tran Van Con's; it is probably the same animal but not yet in an adult state.

He suggests that the Isle of Serpents may be so called because of the profusion of these animals in its waters[2] and appends a sketch of his sea-serpent which he 'saw very clearly in the China Sea, but not long enough unfortunately, for me to fix my attention on the details of the head and the feet'.

The sketch shows what seems to be a sea-snake swallowing a turtle. One can even say what species of snake it is: *Pelamis platurus*, which is found all over the Pacific in different colorations, but one of them consists of alternate yellow and dark brown bands.

I would not doubt for a moment that this was what Jourdan saw, were it not that his description coincides most strikingly with that of the striped super-salamander which the *Nestor* met at the entrance of the Malacca Strait in 1876, the notable difference being that one is 10 feet and the other 200 feet long. The *Nestor* monster looks exactly as Jourdan's snake would do if it were twenty times the size: the same blunt head joined directly to the body, of the same oval shape; the same alternation of black and pale yellow bands; the same enormous tail (the most enormous of all in the whole class of vertebrates!) and tapering gradually. Finally, the geographical area is very similar, since the Malacca Strait is a sort of continuation of the China Sea.

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[1] He does not say whether they also had a swelling and four feet.

[2] Actually it is because there are more than 100,000 vipers in its 600 square miles.

But we should also remember that Richard Proctor suggested that the *Nestor* monster could be an unknown species of giant ray, and perhaps what Jourdan thought was a swelling of the body with four feet might be the wider and, as it were, winged, body of a ray. As they move in large undulating strokes, a ray's wings—which are really pectoral fins—could be momentarily mistaken for limbs. In this case the turtle-bodied snake would be a species of large ray that would be hard to identify. I think it might also be some kind of small shark, which might not be recognized when seen from above. Some, like the Leopard-shark (*Triakis*) of the South Pacific and the Zebra-shark (*Stegosoma fasciatus*), are in fact marked with very distinct alternate dark and light stripes.

Or it might really be a scion of the *Nestor* animal, the most mysterious of all sea-serpents, a monster among monsters, even less known than the Great Unknown itself.

The Lord-of-the-Sea of Malagasy legend is much more like the Vietnamese giant centipede. Dr Georges Petit, then assistant director of the laboratory at the Paris Museum, tells us of it in his book *L'Industrie des Pêches à Madagascar* (1930), and believes that he has seen this fabulous animal, born, according to the Bezo natives, of the *fananina*, an undoubtedly mythical land snake.

This needs a word of explanation. The Sakalavas believe in the transformation of fishes, thus snakes turn into moray eels in the sea, and tortoises turn into turtles. Nor should we laugh too loud at such beliefs; I have heard fishermen in the south of France tell me quite seriously that morays are due to eels mating with land-snakes. And the belief about turtles will be found in plenty of zoology manuals.

The family tree of the *tompondrano* (or Lord-of-the-Sea) is more complicated. The worms that eat the entrails of a man of high caste turn into a special kind of snake, *fananina*. These grow to a prodigious size, and when they are too big to move on land, they dive in the sea where they become *tompondrano*.

Dr Petit wondered whether the Lord-of-Sea, the terror of fishermen from the south-west of Madagascar, was also a myth, or whether the accounts of those who said they had seen it included a bit of truth about a mysterious and unknown sea-animal. Might not the *tompondrano* have something to do with one kind of sea-serpent?

> We have ourselves [says Dr Petit in the official plural] been witness of a fact sufficiently remarkable and enigmatic to be summarized here.
>
> On the night of 20 to 21 January 1926, being worried by the fall of the barometer announcing the cyclone on the 22nd, we had to leave our camp at Lavenombato, on the left bank of the Onihaly. We went back to Tuléar, some thirty miles, by canoe. The weather was very close; the night was very dark and the sea rough. About half an hour after midnight, as we had just passed Sarodrano and were going towards Ankilibé, my attention was drawn by some bright but fleeting and intermittent lights, a few seconds apart, which rose above the level of the water, less than a mile from our boat. Though much less powerful, they could be compared to the beam of light of a ship's searchlight. They seemed to be coming from a body rolling on its axis. Behind this source of light one could see a phosphorescent trail, the length of which was difficult to estimate in the conditions under which it was observed. The man in the bow of our canoe had dropped his paddle and turned and looked back so as not to see it. My 'commander' obstinately kept his eyes on the bottom of the boat, and the after paddler trembled in every limb. It was not until some time after the lights had gone out near the rocks behind us that we could get under way again. The fishermen told us that we had met the *tompondrano*, that we had been in great peril, and that bad luck awaited us. They did not fail to associate our singular encounter with the storms that followed. My commander also blamed it for the death of a distant relative.

The *tompondrano*'s origin as an overgrown land snake and its reputation as an ill omen is surprisingly reminiscent of the *Sœ-Orm*, but this merely shows that all men react to similar phenomena in the same way. Nor should we give much weight to Dr Petit's own observation. The dead or wounded body of any big sea-animal floating on the surface of a fluorescent sea or being attacked by luminous fish or squids would give this very striking effect. The natives automatically connected it with the *tompondrano*, just as westerners begin to talk about the sea-serpent as soon as they see a big animal in the sea and fail, for whatever reason, to recognize it.

We should take more notice of the account the Vezos gave Dr Petit about the *tompondrano*'s traditional appearance and habits:

> The Lord-of-the-Sea appears rarely. But he shows himself, whenever the time may be, by always moving against the wind. He is 70 to 80 feet long, and his wide flat body is covered with hard plates, rather like the bony armour on the back of a crocodile, but bigger. The tail is like a shrimp's tail with its terminal flap. The mouth is ventral, the animal must turn on its back to attack. A sort of hood which the animal may raise and lower at will protects its eyes which look forwards but

> are placed well to the side. The head is luminous and shines lights as it comes to the surface. It moves in vertical undulations.
>
> Some Malagasies say the animal has no legs. Others say it has front flippers like a whale's. Finally the body is striped in a longitudinal direction, with stripes of different colours, white, red, green or darker. It has no smell. The most frequent appearances occur in the area of Ankilibé, at Nosy Vé, and Lanivato (Tuléar province).
>
> To avoid the dangers which the *tompondrano* causes, an axe and a silver ring are hung on the boat's bows.

Because of its size and its vertical undulations Dr Petit connects the *tompondrano* with *Megophias*. Because of its bony plaques he connects it with the Annamite giant millipede. And he considers that 'the colour indicated by the Malagasies, that strange motley the animal's body wears, is similar to the coloration reported by Jourdan'. Here I cannot follow him, for one beast is categorically stated to be striped longitudinally and the other transversely. In any case Jourdan's monster is clearly quite a different animal, an intruder that must be kept out of this argument.

There remain many features of the *tompondrano* which enable one to identify it at once with one type of sea-serpent. The Vietnamese giant millipede and the Lord-of-the-Sea are alike in having bony plaques and a tail like a shrimp's, and the former's apparently segmented body and lateral appendages are like those of the cetacean centipede described by old European writers. These concordant descriptions by very distant people give us a great deal of information about this particular type, the nature of which can now be discussed.

Can this sea-serpent really be an arthropod as Dr Krempf suggested and some of its popular names and anatomical features imply?

The arthropods are, numerically speaking, by far the largest branch of the animal kingdom. They embrace all the invertebrates protected by a jointed carapace and thus now include, besides some small obscure groups, the vast regiments of crustaceans, arachnids, myriapods and insects. For our present problem we can rule out the last two groups, which except in very rare ultra-specialized cases, never live in the sea. It is the crustaceans that are the sea arthropods *par excellence*. But I must also mention here two groups of aquatic arthropods which were of great importance in the Archaeozoic Era but are thought to have been extinct for 250 million years, the Trilobites and Eurypterids.

The Trilobites, so called because their bodies seem to be made of three lobes, are among the oldest known fossils, for they are found in lower Cambrian deposits, more than 500 million years old. These animals, which looked like big flat woodlice, remained exclusively marine and pullulated in all the oceans for some 250 million years, before dying out in the Permian Period.

They were not as a rule very big, ranging from three-sixteenths of an inch to 2 feet 3 inches at the very maximum; most were between three-quarters of an inch and 3 inches.

This was not true of the Eurypterids, the undoubted giants of the arthropod empire, for this reason sometimes called Gigantostraca. They were like monstrous scorpions whose sixth pair of legs had been turned into great paddles—hence the name of Eurypterids or 'large-finned'—and whose tails had sometimes been turned into rudders. The size, for articulated animals at least, was sometimes enormous: *Pterygotus*, the 'Great Seraphim' as the Scottish quarrymen called it when they discovered it, was over 6 feet long, and one species of *Stylonurus* was 10 feet long (see Plate 61).

When they first appeared in the Ordovician Period, 400 million years ago, the Eurypterids lived in the sea, but they reached their peak in the brackish water of lagoons towards the end of the Silurian, and declined little by little during the Devonian, having invaded fresh water, before dying out in the Permian 220 million years ago. That such large water scorpions should after all have survived would not be impossible. Animals no less ancient—or almost as old—are still alive today, such as the Brachiopods, Crinoids or Monoplacophorans, and even that close cousin of the Eurypterids and Trilobites, the King-crab. But it is hard to believe that there ever were, or could be, ones 60 feet long.

The most enormous of the Eurypterids were certainly larger in mass than any living arthropod, but their length was of the same order as that of the largest living crustacean. the Giant Spider-crab, or Stilt-crab of Japan, which is 13 feet across with its legs outstretched. It seems that it is mechanically impossible for an arthropod structure, that is to say one totally enclosed in articulated armour, to grow beyond a certain size. A zoologist finds it hard to imagine a centipede 60 feet long like the Vietnamese millipede. Praying mantises as tall as giraffes and tarantulas the size of houses are creations of science fiction writers, and must remain so, on our planet at least.

Moreover, quite apart from mechanical considerations, it is quite inconceivable that in any zoological group there could be species ten times larger than the largest other species: there are always intermediate sizes between dwarfs and giants. Nature sometimes moves in leaps and bounds, but not such big ones as that.

If the Vietnamese millipede, *alias* Malagasy Lord-of-the-Sea, *alias* cetacean centipede, cannot be an arthropod, it does not mean it cannot exist. Its features do not mean it *must* be an arthropod, any more than the wings of a bat or a pterodactyl prove it must be a bird.

Firstly, the tail could be like a shrimp's or a lobster's in having several lobes and being arranged horizontally. But in vertebrates a horizontal tail is a feature of mammals (and birds, which are not in the picture here). The manatee has a tail like a rounded paddle, and some cetaceans have a scalloped end to the tail. The tail of sea-mammals may thus have one or several lobes as in the crustaceans.[1]

Secondly, the horizontal tail is strictly related to the vertical movement of the body, which is expressly mentioned and is a feature of a sea mammal.

Thirdly, some of the Malagasies said the animal had one pair of flippers like a whale's.

Fourthly, some mammals also have an exoskeleton—that is, they are armoured. The best known today are the armadillos, which show the beginnings of segmentation (see Plate 62). The bands thus formed vary in number and usually encircle the middle of the body. *Cabassous* has the most with twelve or thirteen. In the past their giant uncles, the glyptodons, had a similarly segmented tail.

We also know, as I have already mentioned, that the zeuglodons, and others of the Archaeoceti, were armoured too. For these very long animals to bend in order to propel themselves their armour must have been articulated, or rather divided into transverse segments, like the carapace of a caterpillar or a millipede. The Archaeoceti's dermic armour could well have been not very visible externally in some species, and even be no more than small bones in the skin, as in the giant sloths of the genus *Mylodon*, distant cousins of the armadillos.

Thus we return again, by analysing four particular points, to the notion that some sea-serpents could be surviving Archaeoceti, related in some degree to the zeuglodons. Perhaps after all, this armour, or vestiges of armour, was why they could withstand the harpoons and guns occasionally fired at them. Perhaps also the weight of this armour made them sink more quickly when they died, thus reducing their chances of washing ashore and being known to man.

At all events the theory that the Along Bay dragon is an archaic cetacean is the *only* one which reconciles the French naval officers' accounts of it 'blowing' and Tran Van Con's account, which, like the legend, says it was armoured and segmented.

The lateral appendages which gave it the name of 'millipede' and 'cetacean centipede' have still to be explained. Although Aelian and Rondelet described them acting like a galley's oars, they could not have been seen when the animal was swimming normally (but only when it made a banking turn), and their purpose must have been inferred from seeing washed-up specimens. Rondelet, quoting Aelian, says it is a beast 'which one cannot look at dead upon the beach but with great fear'. And the details of the 'millipede' in Vietnamese legend are probably founded on post-mortems like Tran Van Con's.

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[1] We should not rely too much on Fernand Fleuret for proof that the Vietnamese dragon is a vertebrate. He wrote in 1936:

> In the same Along area a doctor of my acquaintance, and brother of one of our most eminent critics, found the remains of a *Megophias*. He found a gigantic vertebra, which a native told him belonged to the body of *That which one does not name*, and which for long months fouled the shore with its putrefaction. The doctor still has the vertebra, which is not that of a whale, nor of any other cetacean.

But a shark's, I dare swear. Or, if it isn't, what a pity that the doctor and his eminent brother have remained as nameless as the beast that provided the bone!

The first idea that springs to mind is that these lateral appendages, 2 feet 6 inches long, which he describes, are merely the animal's ribs, the flesh having rotted away. But this does not agree with his exact description of the armoured segments. So perhaps they are true extensions of a dermic exoskeleton.

Moreover Alfred Howell has shown that the zeuglodon's 'propulsive mechanism must have been in the nature of a pair of symmetrical and continuous lateral fin-folds extending in a fore-and-aft direction along most of the length of the tail'. If we imagine that these lateral fin-folds were scalloped —which they may very well have been—we shall have an anatomical structure very like Rondelet's picture, which at once becomes much less extravagant. As the zeuglodon was armoured it is possible that its segmented armour extended into the lobes of these lateral fin-folds, making them more rigid and thus more efficient.

This theory will at once solve the problems of stability in the zeuglodon—or in a closely related species—the bizarre anatomy of the cetacean centipede and the strange segments with lateral appendages which form the Indo-Chinese dragon's armour. Finally we must recall that Rondelet says that according to Aelian 'one can see the hairs of very big nostrils'. Whales and dolphins are quite hairless, but at birth they still have a few hairs round the mouth, which suggests that their ancestors must have had more. It is thus very possible, and indeed probable, that the Archaeoceti had moustaches, a point which should be mentioned now, lest the reader think that whiskered sea-serpents must necessarily be pinnipeds.

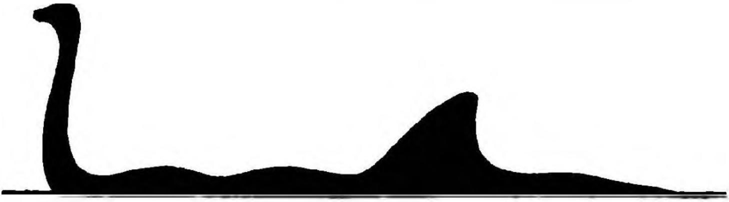
Nobody in the 1920s thought that the sea-serpent could have anything to do with the zeuglodon, a beast whose skeleton was exhibited in the museums, and those who took the animal seriously still thought it could only be *Megophias*, Oudemans's long-necked seal.

Meanwhile sea-serpents went on being seen in the most ordinary places and described in most matter-of-fact terms. On 13 May 1924 Dr J. Pellegrin read to a meeting of the Zoological Society of France a letter he had from G. Juranville, Inspector of Public Assistance in Corsica. A week earlier, at 9 o'clock on the morning of 6 May, he had seen a serpentine animal about 100 feet long in the Gulf of Ajaccio on the beach at Agosta. 'It showed a raised head, and the rest of the body seemed to roll in vertical undulations.'

Many years later, Dr P. Chevey, who had succeeded Krempf as Director of the Oceanographic Institute of Indo-China, told the same learned body of a much more circumstantial report of about the same time and coming from Oceania.

The steamer *Saint-François-Xavier*, which ended her days on the rocks of the China Sea, was on the Tongking–New Caledonia–Australia run, when her captain wrote the following letter.

> Haiphong, 18 March 1925
>
> Sir, I am sending you a little sketch drawn at sea several minutes after the appearance of the famous sea-serpent. The second captain, the second lieutenant, the radio officer and the third engineer are unanimous in confirming the following lines:
>
> On 2 February 1925 while on passage from Nouméa to Newcastle, the ship making 10 knots, at 18.30 hours abeam of Port Stephens on the east coast of Australia, two masses like turtles' shells were seen floating 30 feet from the ship on the starboard bow.
>
> Abeam of the engines there rose a big head like a camel's head, on a long flexible neck having a great similarity to a swan's neck. The height of the neck was about eight feet. The body, as thick as the big Bordeaux barrels, formed a chain of five loops; on the fourth loop, an aileron as on sharks of large dimensions, measuring 5 feet in height and in width at the base. The aileron seemed to be black in colour; the colour of the animal was dirty yellow, the skin smooth without appearance of scales.
>
> As it passed astern of the ship and was abeam of the starboard screw, the animal's head began to move backwards and forwards, which led us to think it had been touched by a blade of the screw; its movement seemed hindered and was not at all like that of the little snakes seen near the coast.
>
> The animal was visible *for fifteen minutes*, no optical illusion is possible. For, besides the testimony of the Europeans, the Blacks from New Caledonia serving as seamen on board, the Annamite boys and Chinese stokers all gave one cry: 'There's the Dragon!' The Chinese even made an offering to it.
>
> As night falls very quickly at that time we could not give other details, being one and all fairly taken aback by this fantastic apparition ...
>
> Raoul Jaillard



104. The *Saint-François-Xavier* sea-serpent, 1925, after Captain Jaillard

One could hardly wish for a more trustworthy report. It seeks no publicity, but is a private letter to a superior officer, which was eventually published a dozen years later without the writer's knowledge. It affects no literary graces and does not attempt to be sensational. Nor does Jaillard draw any zoological conclusions about what the animal was, yet what he says could hardly make the point more strongly. He is surprised to find that his sea-serpent does not behave like a small sea-snake, indeed he is so surprised to see it moving its head backwards and forwards—which is quite normal for a swimming mammal—that he thinks it must be wounded. He has certainly not altered his testimony to agree with his preconceptions. And he has watched it carefully for a quarter of an hour.

His sketch shows a strange humped and swan-necked monster. Although the text speaks of a 'chain of five loops', with the aileron on the fourth, the sketch shows four humps with it on the third. But this is easily explained if we suppose the captain considered the head and neck to form the first 'loop'

Dr Chevey pointed out that the sketch was very like those published by Gould of the beasts seen in Norway in 1910, in the Orkneys in 1919 and off St Paul's Rocks by the *Tyne* in 1920. This is true of the front of the animal, which agrees with all those 'umbrella-handle', 'giraffe-necked' or 'periscope' monsters. But the great discrepancy is Jaillard's large dorsal fin.

If the sketch is accurate and not a composite picture of different parts appearing above the water at different times; if, in fact, the fin is really a dorsal one and not a tail fin that appeared as the animal dived, we have here a quite new type of sea-serpent, for it is inconceivable that if there were such a conspicuous fin other witnesses could have missed it. The 'dirty yellow' colour also seems very different from the black, dark brown or grey, but this is less significant, since there may be considerable variation within a species, and the apparent colour may be much affected by the light and background. The *Saint-François-Xavier* animal may after all be a traditional long-necked sea-serpent which has raised one of its hind flippers above the surface.

Chronologically we should now return to Europe, but it may be best to deal here with other events in New Caledonia. We find that some of the sea-serpents there are of the same maned type we met before, though the witness's comments on them are not particularly happy:

> In September 1929 [writes Mr R. Reynell Bellamy] I was living in a remote corner of the French South Sea Island of New Caledonia, and there one day in a shallow, sandy bay close to my plantation I was privileged to see a great sea-snake. My attention was first taken by a dark object moving in the water about two or three hundred yards from shore; I pointed it out to my wife, saying it must either be a turtle or a dugong, with which those waters abound. But even as we looked, a third dark spot appeared above the surface, travelling immediately behind the

> first; then yet more of these humps broke water and at the same time the first one uprose, revealing a typical snake's head supported on the usual serpentine neck and form.
>
> On seeing this we realized immediately that we were looking at a giant water-snake, and we shinned up a tree overhanging the beach, where I could have a better view of the creature. It was now swimming obliquely across the bay, and from my vantage-point I could observe the animal completely, both above and below the water, which was as clear as crystal. It swam in a leisurely manner, with the head upheld some four or five feet above the surface, while behind it, coil upon coil of its great length kept protruding out of the water; its head was darting to and fro as though searching for something, then, on sighting a shoal of mullets, it plunged after them at great speed, and finally disappeared amongst them amid a deal of splashing and a shower of frantically jumping fishes.
>
> At the time I estimated the reptile as being about sixty feet long, and, as having a head about the same size as that of a Newfoundland dog, but when, some weeks later, one of my hunting dogs, in pursuit of a deer, swam across the bay and in the very same spot as that in which we had observed the sea-serpent. I saw at once that I had originally much under-estimated its size.
>
> Some time afterwards someone suggested that what I had taken for a sea-serpent might in reality have been a school of porpoises swimming one behind the other, the leader alone with its head above the water; also it was argued water-snakes do not swim in the manner I described. Since then I have watched carefully many of the smaller sea-snakes—usually about three or four feet long, which are very numerous in the seas around New Caledonia, and which in swimming made exactly the same movements as did their larger relative.

As Mr Bellamy has made it quite clear that his sea-serpent undulated vertically (as the humps and the characteristic movement of the head imply), and as sea-snakes undulate horizontally like all the other snakes, one is tempted to draw a brutal conclusion. He can never have watched a sea-snake, in which case he is lying. Why shouldn't he be lying about the sea-serpent too?

I don't think however, we need take such a disagreeably severe line. Mr Bellamy had lived a long while in New Caledonia, and he *must* therefore have seen plenty of sea-snakes, since the coastal waters seethe with them. It is his defective observation and preconceived notions which are to blame. He has described the movements of a great sea-serpent that is apparently a mammal quite correctly, and it was a natural human reaction to think it must be a snake. When it was objected that sea-snakes did not swim like his monster, he thought his word was being doubted and that he was suspected of having seen some quite ordinary porpoises. He therefore insisted, quite wrongly, that his sea-serpent was real because it had swum like other real sea-snakes. It is, after all, surprising how many people who have seen snakes, if only at the cinema, and still think they undulate vertically.

Mr Bellamy tells of other appearances of sea-serpents in Oceania, which we must examine with interest, but with reservations about his comments and his descriptions at second hand, which may likewise be influenced by his preconceived notions.

> I am far from being the only white man from the South Seas who claims to have seen sea-snakes of immense size. I know personally, a planter from Api, in the New Hebrides group, who, when he was once becalmed in his recruiting schooner, saw close alongside his vessel a huge snake about eighty feet long. The reptile raised its head about twelve feet out of the water to look at the schooner in which it appeared to be most interested, but finally swam off without attempting to molest the craft. The native boys aboard were immensely excited at the creature's appearance, but said that they had known of its existence before; the planter described its colour as being yellow and brown running in not very well-defined stripes; and it had, he stated, at the back of its head a soft mane of very coarse hair.
>
> On another occasion such a creature showed itself near Nouméa, where it uprose close beside an open boat, from which the manager of the Nouméan Offices of the Messageries Maritimes was fishing. The Frenchman was accompanied by his wife, and from that day until the end of her husband's term in the Colony the lady refused to go out again in a small boat in New Caledonian waters.
>
> Yet again was this marine reptile seen near Nouméa; the *Euphrosyne*, the British Government's yacht from the New Hebrides, was undergoing repairs in Nouméa, and her captain, finding his time passing rather tediously, called away his dinghy and with a couple of his Kanaka seamen pulled round to a neighbouring bay where the fishing was reputed to be good.
>
> While they were fishing an enormous sea-serpent reared itself close by them: it raised its head many feet perpendicularly out of the water so that it seemed to tower above the boat and its terror-smitten occupants; the great beast took a prolonged look at the fishing party and then slowly swam away.
>
> The captain described it to Mr. W. Johnston, the acting British Consul for New Caledonia, as being as thick through the body as a large tree-trunk, and as having a head shaped something like that of a horse, only larger. He also observed the mane of hair, and his description of its colouring bore out that of the planter from Api; but evidently this last sea-serpent was considerably larger than either the specimen that I saw, or that which passed the planter's schooner.

It is a pity that Mr Bellamy does not say when these encounters occurred.[1] Perhaps we should not be too surprised that he still considers that animals with a horse's head and hairy mane should be true sea-snakes, for it seemed natural enough for him for snakes to undulate up and down.

While we are in Oceania I should mention some sightings of sea-serpents off Australia. Curran and Kauffeld, the great American experts on snakes say that 'Not a year passes but that one or more are reported from that

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[1] He also mentions, almost equally vaguely, that a little while before 1933 Captain J. Munroe saw, off North Cape, New Zealand, a 150-foot animal as thick as a steamer's funnel.

Island Continent.' But these sightings seem to have left little trace except perhaps for snippets in local newspapers.

We do however, learn that in June 1930 four fishermen who had gone to work the Bellambi reef, some fifty miles south of Sydney, were surprised to see a very long animal, which they thought was a sea-serpent, appear several times on the surface. Mastering their fear, they rowed nearer to look at it. The head, they said, looked like a pelican's. Whereupon David G. Stead, an expert in Australian marine animals, concluded that it must be a Piked Rorqual (*Balaenoptera rostrata*), a very common species in southern Australian waters, which may reach 30 feet. But this is not the end of the story. Several days later a sea-serpent was reported at Scarborough, a few miles away. Many witnesses saw it undulating lazily in the direction of the Bellambi rocks. It seemed to be about 80 feet long and swam with its head in the air at the end of a long snake's neck.

It is hard to see how a whale could behave like this—unless it were put through a mangle. But Mr Stead was not abashed. He thought that this sea-serpent had nothing to do with the other and that the description was quite clear enough for it to be identified as a giant squid. I can only suppose it had a date with the Bellambi whale and was waving a tentacle to say 'Here I come!' or cocking a snook at the crowd on the beach.

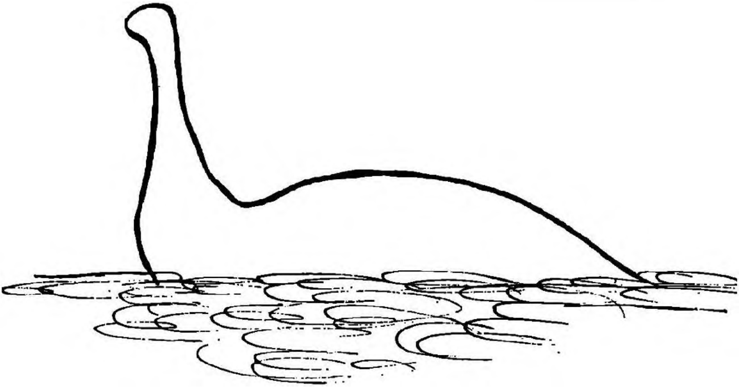
Now we must return nearer home and pick up the thread of the inter-war sightings, which after 1928 became for a while a British monopoly.

Around 1925 sea-serpents had been seen in the Channel. After the B.B.C. programme in 1961 Mr H. Hodgson wrote very succinctly to Maurice Brown:

> I listened with a certain amount of interest to your programme 'The Great Sea Serpent'. I have seen a plesiosaurus.

When asked for further details, Mr Hodgson, an unsophisticated man of sixty-seven, explained that this happened around 1925 when he was engineer on a small coaster, the *G.F.B.*, belonging to G. F. Birch of Spalding, Lincolnshire, and went to some lengths to give the names and addresses of other members of the crew whom he knew to be alive and who could confirm his story. Only after a second inquiry did he give a more explicit description than 'a plesiosaurus' or 'what is now known as the Loch Ness Monster'. Here is what he wrote:

> First of all let's clear the deck. This thing was no sea serpent. It was of great bulk, as big as a 500-ton ship and with a very long neck and small head. The head must have been turned away from me because I thought 'it looks like a football!' It had a terrific turn of speed.
>
> Enclosed please find sketch, it is completely out of proportion but it's the best I can do. I should like to get in touch with someone who would make inquiries



105. The *G. F. B.* sea-serpent, ? 1925, after H. Hodgson

> about the crew, and so confirm what I say. I think I have been privileged to see an extraordinary creature.

Mr Alec J. Gracie's sea-serpent was much more serpentine. Unfortunately we can say little more about it, since, by the time he came to write to John Scott Hughes in 1953, he had mislaid his Norris Log-tables in which he noted the details.

> I was 3rd mate on the 'City of Manila' and we were in the Great Australian Bight bound Melbourne to Fremantle, 1926 or 1927. It was about six bells on a Sunday morning when I noticed about a mile away just such a sight as you recall, ['six to eight arches, which seemed to undulate'] but alas no discernible head ...
>
> I took a quick look with my glasses and then moved quickly to the white quartermaster, handed him the binoculars and asked him what he saw. He said something to the effect that it was 'damn funny', but agreed that it could be a sea-serpent 'if there *was* such a thing'. I said, 'But hang it all man, what else *was* it?' For by this time, nearly half a minute, the thing had gone ... When I told the mate at eight bells he displayed the usual incredulity and then suggested porpoises.
>
> Well you know *your* serpent wasn't porpoises and I know *mine* wasn't!

At about 5.30 p.m. on 23 April 1928 the Royal Mail Ship *Oronsay* left the Gulf of Aden and rounded Cape Guardafui, the tip of Somalia, when two sea-monsters were seen by the passengers.[1] There were thirty or forty of them on board, among them two Australians, Mr W. P. Jones and his wife, of Mossman in Queensland. Six years later, when Sir Edward Mountain published several photographs in the *Illustrated London News* of things seen on the surface of Loch Ness, Mr Jones was struck by their similarity to the strange animals he had seen at sea, and on 25 October 1934 he wrote to Sir Edward:

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[1] In 1935 a dozen people again saw one in Largs Bay, also in the Gulf of Aden.

> I was speaking to the Dispenser of the *Oronsay* and discussing the buildings on the barren cliffs of the Cape when my attention was drawn to what appeared to be a huge fishing net with tremendous floats ahead of us on our port bow. I drew my friend's attention to it and binoculars were produced by the Dispenser and we witnessed a remarkable sight. There were two of these large monsters apparently just lying on the surface of the water approximately a mile from our boat. They appeared to take no notice of us and we steamed past them and obtained a first class view of them.
>
> The knobs protruding above water were solid and not coils as your snaps might convey. The animal in the front clearly showed a snakelike head much bigger than the thickness of its neck. No head was apparent on the second one which was lying immediately behind its mate about 200 yards in the rear.

It is always interesting to find reports which insist, as this one does, that the humps on the 'string-of-buoys' sea-serpent are solid and static, but it is a pity nothing was said about the number of humps and their exact shape.

The next British report might be treated with suspicion (though I particularly welcome it) since it comes from the man whose fertile imagination gave us Sherlock Holmes (whose methods mean so much to me) and *The Lost World* (in which the cryptozoologist's wildest dreams come true).

In 1928, two years before he died, Sir Arthur Conan Doyle was on the deck of a steamer off Aegina (Antikythera) when an unusual sight distracted his attention from the view of the famous Temple of Poseidon.

> I saw, swimming parallel to the ship, under water, a curious creature around four feet long with a long neck and large flippers. I believe, as did my wife who also saw it, that it was a young plesiosaurus. A Queensland correspondent wrote me that a young plesiosaurus was taken in a net off Mudgee Beach, Australia. He sent me a sketch which is like the one I myself saw off the coast of Greece.

I don't know what the 'young plesiosaurus' in Australia was, but I feel sure it must have been a known animal or a hoax, or we should have heard more about it. The one seen by Sir Arthur and Lady Conan Doyle is very like what Mackintosh Bell saw through equally clear water. But it was so very much smaller it must have been practically newborn, indeed it is so small that perhaps it has no business in the sea-serpent's dossier.

The next five reports are all British, and for reasons which will soon be clear.

First there is Major W Peer Groves who wrote in October 1933 to the *Daily Mail* to say that five years earlier, that is in 1928, he had seen a strange 'sea monster' off the Isle of Man where he was on holiday with his wife and children.

> The beast [he wrote] was obviously large—many feet in length—though only the head was visible. The head was about as big as that of a large bull, but rather broader between the ears, ending in a long, dog-like snout.

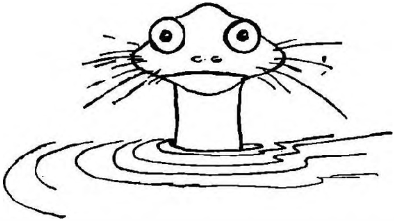
Many years later, on 13 November 1961, I was dining with my old friend Gerald Russell[1] and an English friend of his who was passing through Paris. I failed to catch the friend's name when we were first introduced but found over dinner that he was a great traveller, fascinated by zoology, and much concerned with an East African nature reserve. As much from habit as anything else I asked him point-blank:

'You have travelled so much, I wonder if you have seen any sea-serpents?'

He began to shake his head, and then said,

'Well, yes ... but only once.'

My heart leapt, and he went on to tell me how long ago on a boat he had been able to watch the head and neck of an unknown sea-monster from fairly close and for a long while. He drew me a little sketch. From front view the head was distinctly diamond-shaped, it had huge eyes looking forward, a wide mouth and a cylindrical neck; there were sparse long whiskers on the head. In short it was a maned sea-serpent. But what had most struck Gerald's friend was the extraordinarily sweet and gentle way it had looked at him and the rest of his family on deck: 'It looked so nice. So nice!' he repeated enraptured.



106. The Isle of Man sea-serpent, ?1928, after Michael Peer Groves

He promised to send me a short report on this encounter and a better drawing by another witness who was a better artist. He thought his sister had taken a photo of it (my heart leapt again); it had 'not come out very well' but he would try to get me a print of it all the same.

I went home happy that evening, but, alas, I heard no word from him. No doubt he had forgotten about it in the press of other business. So I wrote to Gerald Russell and asked for his friend's name and address. His name proved to be Michael Peer Groves. He must be one of the major's children, and I could file his account with the cutting from the *Daily Mail*. He was then on holiday somewhere in the south. Then Gerald went to India, and what with one thing and another I have not managed to contact him again. I still hope one day to have an important report and perhaps the only photograph ever taken of a sea-serpent at sea.

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[1] Readers of *On the Track of Unknown Animals* will recall his name in connection with the first capture of a giant panda and the first attempts to capture a snowman.

The next report is British only in that it comes from what was then part of the Commonwealth. Tromp van Diggelen, a South African sportsman and big-game hunter, writes in *Worthwhile Journey:*

> While returning from England in 1930 on the ill-fated *Dunbar Castle*, I actually saw a sea-serpent. It was 11 o'clock on a sunny November morning.
>
> The neck of the 'thing' was very plainly visible through my Zeiss marine glasses (it was only a few hundred yards away), and it was sticking out of the water some 12 or 15 feet and was travelling fast, as if in terror.
>
> The movement was much more like that of a cormorant as it swims away from a boat when frightened. I saw no pronounced head, neither were there any coils or flippers visible ...
>
> The passengers were all crowded on the port side of the ship to watch nearby Robben Island, and my only companion was an American lady.
>
> I handed her my glasses, and said, 'Look at that.'
>
> 'Good heavens, it must be a sea serpent,' she exclaimed. I had not put the suggestion to her.

On 8 March 1934 Mr L. M. Wilkes of Sunderland sent Dr Georges Petit, editor of *La Terre et la Vie*, a report of an encounter in British home waters:[1]

> You may be interested to know that in the month of June four years ago [1930] I was steward on a small coaster which ran a regular fortnightly service between the port of Blyth in Northumberland and Queenborough on the Thames Estuary.
>
> On the morning in question when I left my cabin to begin my duties the sun was shining most wonderfully brightly ... As soon as I came on deck I began to check our position: we were north of the Norfolk coast; as I did this I observed a creature of curious appearance about 100 or 200 yards from the ship's deck, with nothing to obstruct my view of it.
>
> It had a neck and a head like a camel, without ears; if it did have ears, they must have been very small, for I could certainly not see any.
>
> I would say that the neck must have been about 4 to 6 feet long. The animal seemed to look at the boat lazily. I did not really see it [its body?] above the water, but I watched it all the time that it was near the surface, about two minutes; then it sank gently, the head being the last to disappear, making no splash or eddy.

A year later, in June 1931, another sea-monster was seen a little further south off the same coast, at Thorpeness in Suffolk. In *The Times* of 12 December 1933 there is a short account by Mrs Sibyl M. Armstrong of the animal which she, her governess and her cook saw between 8 and 8.30 in the evening.

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[1] The text that follows has had to be retranslated from the French translation published by Dr Petit [Translator's note].

The sun was still shining, and the sea was very calm. The animal swam very fast breaking the surface, some 400 yards from the shore, parallel to a sandbank. At first they saw one black rounded hump which they thought was the head, and then a flatter second hump some way from the first. At times several intermediate humps appeared between the end ones, showing that it was indeed all the same animal. The total length then visible at the surface was, said Mrs Armstrong, about four or five times that of an ordinary rowing-boat passing at the same distance (i.e 50 to 60 feet?). The head, which seemed to be round, and which swung from side to side, was about three times as big as a bather's would have been.

When the animal had passed the sandbank at great speed, it turned to sea, making a great commotion in the water as it did so, with what seemed to be a pair of large grey fins. Mrs Armstrong told Commander Gould, 'If one had not known the length of body in the water behind, one would have thought it a colossal bird.' But nobody took up this suggestion to put forward a new and original theory about the sea-serpent, nor did they do so when Tromp van Diggelen compared his sea-serpent to a cormorant. Might it not, after all, be a bird?

The idea is not so bizarre as it sounds—certainly less so than the theory that the monster is a *flight of birds*. With a little imagination and good knowledge of zoology one could make out a good case. There used in the Cretaceous Period to be a sort of grebe or diving sea-bird more than 3 feet long which could not fly, called *Hesperornis*. In New Zealand the relatively recent remains have been found of a penguin nearly 6 feet high. No bird is better adapted to an almost exclusively marine life. Penguins are now known to dive to at least 100 fathoms in the Antarctic.

In 1948 a remarkable piece of evidence appeared in support of this theory. Tracks of huge feet were found on the beach at Clearwater in Florida. They were 18 inches long and had been left by webbed three-toed feet extraordinarily like those of a gigantic bird. My friend Ivan Sanderson calculated from their depth in the damp sand that this incredible biped must have weighed between 2 and 3 tons.

But even if there still were gigantic birds 6 or 10 feet long or high they would make pretty small sea-serpents, and they could not explain Mrs Armstrong's monster, which was five or six times that length.

Oddly enough it was also a bird—a parrot this time—to which the animal was compared that was seen a little later on the opposite side of Great Britain, off the west coast of the isle of Arran near the Firth of Clyde.

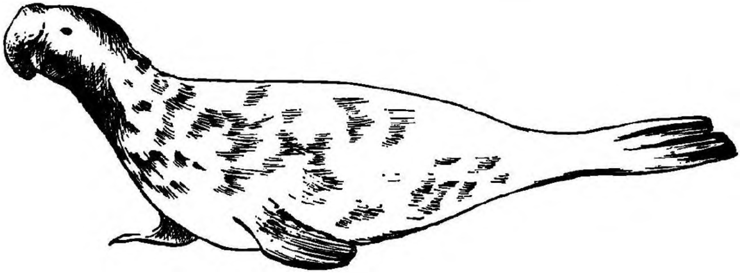
On 28 July 1931 Dr John Paton of Langside, Glasgow, was on holiday on Arran and was coming back from a bicycle ride with his fourteen-year-old daughter at about seven in the evening. It had been a hot sunny day, and they were pedalling along empty country, when he saw, some yards from the shore, what he thought was an upturned boat on the rocks. As there was no one else about he got off his bicycle to see what had happened:

> I had not gone more than a few yards [he told Commander Gould] when, to my astonishment, a head turned and looked at me from what I had thought to be the bow of the boat ... I waved my daughter's attention to the creature, and made an effort to get as close as possible. The legs or flippers could not be observed, and I wanted to be sure of just what kind of extremities it had. I was disappointed, as the movement evidently frightened it, and it wobbled off the rock into the sea. It made off at a good pace, and left a considerable wake behind it.
>
> The head was parrot-shaped—that is to say, that it had a kind of beak. It was of a rather light grey colour. The body was longer than that of a large elephant—of a similar colour, and just as shapeless.

Dr Paton, who said he knew seals, sharks and cetaceans well, thought what he had seen was unique. The only thing which his animal was at all like was, he said, an Antarctic sea-elephant, but he adds:

> I am of opinion that although the head was small, and close to the body when I saw it, it is probable that the creature would be able to extend the head considerably ... The head could be turned round so fully that there must have been rather a narrow neck between it and the huge body.

It is quite clear from this description that it is a pinniped. It does not seem to be Oudemans's long-necked pinniped, *Megophias*, nor can it be a sea-elephant (*Mirounga*) which has never been reported anywhere in the North Atlantic. In fact it agrees perfectly with the Bladder-nosed Seal (*Cystophora cristata*), stray specimens of which have been seen in British waters (at least eight times to my knowledge). Its erectile and sometimes curiously inflated nose makes it look like a parrot in outline, and its light grey coat is much the same colour as an elephant. An adult male may weigh nearly half a ton and



107. Bladder-nosed Seal

be over 11 feet long—the length of a big elephant—an impressive size. It breeds in Jan Mayen Land and Newfoundland and is normally found between Spitzbergen and the Gulf of St Lawrence, but specimens have been seen as far south as Portugal and Florida, and such a rare and odd-looking beast could easily be taken for a sea-monster.[1]

Without a thorough knowledge of zoology even as careful a writer as Commander Gould can introduce elements into the sea-serpent's dossier that have no business there. But you can't make an omelette without breaking eggs, and there is no doubt that Gould's omelette has given us plenty to feed on.

Of the next encounter I have been able to find only a brief mention that 'when the *Ceramic* was plying to Durban from Sydney in 1932 a monster with a thick neck with flippers on either side, and a head like a turtle was seen through binoculars'. A turtle's head is very like a parrot's, but it is much more natural to compare a sea-animal to a turtle than to a bird.

Following the *Ceramic* to Natal, we find a sea-serpent in the lake of St Lucia, which communicates with the sea and is now a game-reserve.

On 7 July 1933 George Higgs, a farmer well known in Zululand, was on a fishing expedition to the lake with his four children, two Zulu servants and L. Esmonde-White, Jack Nicolas and G. P. Court of Hluhluwe. Mr Court was the first to see the animal that night. The campers' attention was attracted by what they thought were some of the hippos that live in the lake.

> We all rose to look at them [Mr Court wrote to the press]. I took my field glasses to get a better view.
>
> To my amazement I saw floating in the calm water under a strong moon a long undulating dark body about 30 yards in length. The head and shoulders were similar to those of a hornless ox.
>
> The long body, which lay 'S' shaped, appeared to be two feet broad.
>
> It was lying at right angles to the beach, and facing our camp. Mr Esmonde-White had his field glasses on the creature also, and confirmed my opinion.
>
> Mr Higgs, who has hunted hippo for forty years on this coast and had a pet hippo on his farm at one time, after looking through the glasses, said that hippo did not keep behind one another like that. They would also be making a noise ...
>
> About 30 minutes later the creature disappeared by sinking beneath the surface of the lake, which at this spot averages about five feet deep ...
>
> The following morning Bobbie and Peter Higgs related that at about 8.30 p.m. the previous night they had seen a long, black, snake-like creature about 30 yards long floating or swimming past to the south about 300 yards from the beach. It proceeded slowly and silently.

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[1] Allowing for exaggeration, the 16-foot sea-serpent that Edwin Hansson saw near Strömstadt in eastern Sweden was probably a similar creature. It had a grey coat, opened its mouth, showing its teeth, and growled when the fishing-boat approached— all typical of a pinniped.

Our next British sea-serpent is of a fairly familiar type. The witness, Mrs Lilian Rawlings, was travelling home from Japan on the P. & O. liner *Chitral*. It was April, and she is almost certain that it was 1933 and in the Indian Ocean. The rest of her account I quote from an admirably sensible letter she wrote to her grandson, Walter Rawlings[1] in 1957·

> But ... the following facts I *am* absolutely sure of.
>
> The bell (gong) had gone for lunch. Nearly all the passengers (2nd class) had left the deck, only a few of us remained, leaning on the rail. Then I saw something moving, parallel with the ship, in the same direction (apparently only a few yards from the ship but that I was not competent to judge) a small head on a long neck sticking out of the water and behind the neck a gap and then a hump—the whole seeming to be about the length of our ship. (It would be absurd I think not to assume that the humps belonged with the neck and head, especially as they moved with it.) We watched for (I should guess) from anything from a minute to a minute and a half and then the whole thing quietly sank out of sight. I expected a fuss to be made of what had been seen ... But I heard nothing of it When I *saw* the beast, and realized I was looking at a creature which was generally supposed not to exist, I had the sensation that it was not so very wonderful after all, and that, having once seen it, I might see it again and that others would. Once assured of its existence, my mind accepted the fact and got rid of its astonishment immediately.

As a result, and because she met such general disbelief, she did not record her experience until John Scott Hughes's vignette in the *Observer* in 1953 prompted her to write to him. Despite the very exaggerated size (which Mrs Rawlings admits she was not competent to judge) this is a very convincing account. Moreover, we must also be grateful to her because it is entirely due to her initiative that I have two other unpublished reports sent to Hughes at the same time.

Sightings often lie fallow like this. Although the great serpentiforms are seen fairly regularly all over the world, the witnesses may think what they have seen is commonplace or not worth a solemn report, they may not know any journalists or naturalists likely to be interested, or they may just be afraid of being laughed at. But when there are special circumstances—a systematic inquiry, a favourable report by a well-known person, or a series of reports published together—then people begin to talk. Two things in the 1930s made people in Britain begin to do so; a serious and well-documented book on the subject, and an unknown animal in a Scottish loch. The book was by Rupert Thomas Gould, a retired naval officer, and appeared in 1930. The animal needs no introduction and began to be news in the autumn of 1933.

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[1] Who had a hereditary interest in sea-serpents, since his great-grandfather on the other side of his family was Lord Crawford of the *Valhalla* and his grandfather, the Hon. Walter Lindsay, had seen one from that yacht.

Commander Gould is less celebrated, though he was the first historian of the Loch Ness monster and played a great part in the sea-serpent affair. In 1930 Gould was forty and already had a distinguished career behind him. In his work for the hydrographic department he was responsible for revising the charts of the Canadian Arctic and of the Antarctic, for which he wrote a new Admiralty Pilot. He became an expert on polar exploration and also on the marine chronometer, publishing a learned work on the subject in 1923, and proving his practical ability by repairing John Harrison's famous chronometer in the National Maritime Museum at Greenwich and setting it going for the first time for many years.

He had a particular passion for even more insoluble problems, and was fascinated by unsolved puzzles of history, investigating and checking the facts with scrupulous care. This resulted in two enthralling books, *Oddities* (1928) and *Enigmas* (1929).

Naturally enough the riddle of the sea-serpent attracted him greatly, and he attacked it with learning and care as no one had seriously done since Oudemans. It is no credit to zoology that the next in the list should be an amateur as regards that science, though he was an excellent mathematician, and *The Case for the Sea-Serpent* (1930) is a model of scientific rigour.[1]

Gould did not continue Oudemans's work, but tackled it from a new point of view. While Oudemans tried to collect as many consistent reports as possible, even if it meant accepting many that were very vague, from doubtful sources, or even frankly suspect, Gould aimed at quality. He offered only a selection of reports, but they were all scrupulously authenticated and carefully checked by a man with an intimate knowledge of seamanship, and who had access to official papers and specialized libraries. Log-books, meteorological records, naval archives were all consulted to make sure the witness was telling the truth.

We can therefore be virtually certain that the couple of dozen sightings or series of sightings he cites in his book are genuine.[2]

Thus he greatly strengthens the case for the sea-serpent, though from a zoological point of view he has little new to add. As any honest and intelligent man would have done, he has no trouble in dismissing the various explanations of sea-serpents as known animals or commonplace phenomena.

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[1] Gould had already given a talk on the subject on 24 March 1925 to a club of bibliophiles quaintly called Ye Sette of Odd Volumes, who printed 167 copies of it for their members. I am very grateful to Dr Samuel H. Thomas of Jersey for my copy of this very rare booklet.

[2] The *moha-moha*, which was hardly susceptible to Gould's form of checking, is perhaps the exception that proves the rule. His other reports are: Egede (1734), Ferry (1746), Donald Maclean (1808), New England (1817–19), *Lady Combermere* (*ca.* 1820), *Royal Saxon* (1929), Sullivan and other officers (1833), Nova Scotia (1844 and 1845), Morries Stirling (1845), Lund (1845), *Daedalus* (1848), *Plumper* (1848), *Imogen* (1856), *Castilian* (1857), Macrae and Twopeny (1872), *Osborne* (1877), Matheson (1893), *Umfuli* (1893), *Valhalla* (1905), *Hilary* (1917), Mackintosh Bell (1919), *Tyne* (1920), *Kellet* (1923).

But when he comes to give his own view about their identity he mainly accepts the plesiosaur theory, which had been popular in Britain since the middle of the previous century. His position however, is subtler than those of his predecessors. He considers very shrewdly that:

> The evidence available at present—and even the selection of evidence given in these pages—goes all the way to demonstrate the real existence of more than one type of creature not yet scientifically described.

And he goes on to say:

> I should be inclined to say that it gave ground for believing in three—a long-necked seal, such as that seen by Mr. Mackintosh Bell; a gigantic turtle-like creatture (the Moha Moha, and possibly the *Valhalla's* monster): and (deducible from the majority of the reports) a creature larger than either, and much resembling in outline and structure the *Plesiosaurus* of Mezozoic times. I do not suggest that the last-named is actually a Plesiosaurus, but that it is either one of its descendants or has evolved along similar lines.

This last point is not too clear, but he seems to mean, some reptile, not a plesiosaur, but of much the same shape. Gould had not Oudemans's zoological knowledge, and could not suggest some little known prehistoric animal as prototype, let alone invent a completely new one like *Megophias*. All the same, some years later, after he had studied the Loch Ness affair, he was able to put forward a new and altogether revolutionary theory which I shall come to in due course.

Just before the Loch Ness affair broke, another localized sea-serpent appeared under different skies. It was in the Straits of Georgia between Vancouver Island and the mainland of British Columbia. So far the only sea-serpent on the west coast of North America was that seen by Captain Hope from the *Fly* in the Gulf of California. This new one is much further north in colder waters. As so often it was a report by a well-known person that started the affair in October 1933. It came from the Clerk to the British Columbia Legislature, Major W. H. Langley, who was also a barrister; and the news of this sighting brought to light an earlier one made the year before, by F. W. Kemp, an officer of the Provincial Archives. This is the report that Kemp gave to the *Victoria Daily Times*:

> On Aug. 10, 1932, I was with my wife and son on Chatham Island in the Strait of Juan de Fuca. My wife called my attention to a mysterious something coming through the channel between Strong Tide Island and Chatham Island. Imagine my astonishment on observing a huge creature with head out of the water travelling about four miles per hour against the tide. Even at that speed a considerable wash was thrown on the rocks, which gave me the impression that it was more reptile [i.e. lizard or saurian] than serpent to make so much displacement.

The channel at this point is about 500 yards wide. Swimming to the steep rocks of the Island opposite, the creature shot its head out of the water on to the rock, and moving its head from side to side, appeared to be taking its bearings. Then fold after fold of its body came to the surface. Towards the tail it appeared serrated with something moving flail-like at the extreme end. The movements were like those of a crocodile. Around the head appeared a sort of mane, which drifted round the body like kelp.

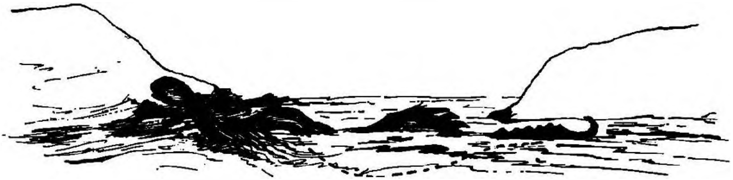
The Thing's presence seemed to change the whole landscape, which makes it difficult to describe my experiences. It did not seem to belong to the present scheme of things, but rather to the Long Ago when the world was young. The position it held on the rock was momentary. My wife and sixteen-year-old son ran to a point of land to get a clearer view. I think the sounds they made disturbed the animal. The sea being very calm, it seemed to slip back into deep water; there was a great commotion under the surface and it disappeared like a flash.

In my opinion its speed must be terrific and its senses of smell, sight and hearing developed to a very high degree. It would be terribly hard to photograph, as its movements are different from anything I have ever seen or heard of. I should say its length to be not less than 80 ft. There were some logs on Strong Tide Island which gave me a good idea as to the size of the monster as it passed them. I took a measurement of one the next day which was over 60 ft. in length, and the creature overlapped it to a large extent at each end. I put a newspaper on the spot where it rested its head and took an observation from our previous point of vantage. The animal's head was very much larger than the double sheet of newspaper. The body must have been at least 5 ft. thick, and was of a bluish-green colour which shone in the sun like aluminium. I could not determine the shape of the head, but it was much thicker than the body.

I did not report my strange adventure except to one or two trusted friends, for fear of ridicule and unbelief. About a year later, it fell to Major W. H. Langley's lot to see the same or at any rate, a similar monster in the vicinity also of Chatham Island. I enclose sketches.

Let us now see what the other Canadian official has to say:

On Sunday [1 October 1933] my wife and I went for a sail in the *Dorothy* around Discovery and Chatham Islands. It was a beautiful sunny day, with a nice northerly breeze. On entering the passage between the north end of Chatham



108. The Chatham Island sea-serpent, 1932, after F. W. Kemp

> Island and Fulford Reef, the breeze lightened a bit, and we were proceeding almost on an even keel, with the end of the flood-tide under us, when the incident happened which for brevity's sake, is set out in the following numbered paragraphs:
>
> 1.—The time was about 1.30 p.m. 2.—We were proceeding quite slowly and silently when my attention was attracted by a very loud noise, something between a grunt and a snort accompanied by a huge hiss. 3.—I looked ahead in the direction of the noise, at the same time shouting to my wife, and we both saw a huge object about 90 to 100 feet off, a little on the port bow, and on the edge of the kelp just off the Chatham Island shore. It was only visible for a few seconds, but what both of us are absolutely agreed upon may be put down as follows: (*a*) It was every bit as big as the back of a large whale, but entirely different in many respects. (*b*) Its colour was of a greenish brown. I should say a sort of dark olive green. It had markings along the top and sides. They seemed to be of a serrated nature. 4.—Its colour was very distinct, as the sun was shining brightly on its wetted surface, and it was such a short distance away that there could be no mistaking it. 5.—Just shortly after it went down a swirl appeared on the surface of the water ahead of the *Dorothy*. 6.—My wife saw it break water a very short time afterwards on the other side of Fulford Reef. The appearance was exactly similar, but it was much farther away and had travelled fast. 7.—The only part of it that we saw was a huge dome of what was apparently a portion of its back.
>
> I may add that I have been cruising about local waters for nearly forty years in my leisure time. I have seen dozens of black-fish. A boat I was in, in 1911, killed three whales—a hump-back, sulphur bottom, and fin-back and towed them alongside to the whaling station at Sechart. Upon arrival at the station there was a sperm whale hauled out there. There was no similiarity except in size between any of these and the creature we saw on Sunday. A porpoise, of course, would look like a sprat in comparison with it. Upon comparing notes with Mr. Kemp, the appearance of this object tallies almost exactly with the creature that he and others saw about a year ago in the same neighbourhood.

I think it is safe to suppose that these two sightings made a year apart in the same waters refer to the same species of animal, if not to the same individual, though neither report gives us a very clear picture or enlightens us much over the beast's identity. Fortunately Mr Kemp has done a drawing, without which we should be quite in the dark. With it we can read between the lines of his text.

He says that 'the movements were like those of a crocodile', but he shows a series of vertical bends. I think therefore that this must be because of their speed or their jerkiness, not their direction. He says later 'its movements are different from anything I have ever seen or heard of'. Obviously it would be disconcerting to see what seemed to be a reptile moving like a mammal.

Mr Kemp makes no mention of a distinct neck, but he shows one on his drawing. This is also implied by his statement that it was more like some other kind of reptile than a snake 'to make so much displacement'. Clearly it looked like a snake, but made such a wash that the middle part of the body must be bigger as in a quadruped, and he has shown its probable body with a dotted line on his drawing.

Major Langley is even vaguer, we must be content with his statement that the animal 'tallies almost exactly with the creature that he and others saw about a year ago'.

Yes, there were other witnesses. Within a week, Archie Wills, the News Editor of the *Victoria Daily Times*, had 'a dozen letters from other people who said they had seen the serpent, but had refrained from saying anything about it for fear of ridicule'.[1] Then reports began to snowball. Among them were obviously some hoaxes, but Wills decided to accept nothing but signed and verifiable reports, and ended with 'a list of nearly one hundred persons' who had seen the monster. It included three captains, Captain Walter Prengel of the Grace liner *Santa Lucia*, Captain Arthur Slater of the C.P.R. steamer *Princess Joan* and Captain W. H. Davies, examiner of masters and mates in Victoria.

On 4 October 1933 a well-known yachtsman, R. C. Ross, saw the animal, again near Chatham Island. The radio had now taken up the affair, and 'Have you seen Caddy?' was the constant cry, for the beast now had a name, cadborosaurus, chosen by Archie Wills, from Cadboro near Victoria, where it had first been reported. It turned out that there had actually been earlier sightings. The captain of the steamer *Princess Charlotte*, which ran between the city of Vancouver and Victoria on Vancouver Island, had seen it earlier, and so had Percy Barnes, the pilot who had been flying the mails between Seattle and Victoria. So, too, had three duck-hunters near the Chemainus River forty miles north of Vancouver. Jack Nord of Oyster Bay said he had seen it eight years earlier in 1925 when he was returning to Cape Mudge from Menzies Bay with Peter Anderson. It was only 35 yards away. Nord said it was nearly 100 feet long and 2½ feet across. The head was like a camel's, the eyes turned from green to red, there were fangs 6 to 8 inches long, whiskers under the lower jaw and a mane which was continued along the spine. Further along the back there was a dorsal fin 3 feet long. Peter Anderson fired at the animal but fortunately missed; it then dived and disappeared.

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[1] I have had direct confirmation of this from a Canadian correspondent, the natural history journalist E. Jervis Bloomfield. In the thirties, he made the acquaintance of one 'Rusty' Beetle of Port Angeles, Vancouver Island, then a medical student at the University of Washington, Seattle. One day that young man told him of an incident which he had not mentioned since it happened. Several years before he had been fishing in a boat off Dungeness Spit in Juan de Fuca Strait when the sea-serpent appeared quite close to him. It had a serpentine body at least 40 feet long, a head between a horse's and a camel's, and a mane. Before it disappeared the animal swam slowly round the boat for five to ten minutess. When 'Rusty' excitedly told the boat's owner about it,the reply was, 'Rusty, it isn't smart to take a bottle along with you when you go out fishing by yourself.' Somewhat chilled by this he sought out a local journalist he knew well, only to be met by the same reaction. 'Rusty' then decided to hold his peace about his adventure, but, my correspondent reports, 'he has been going over all the books he could find on marine zoology thinking that perhaps he had seen something that was already classified'.

It was also learnt in 1954 that off Vancouver Island in the late fall of 1928 a fisherman called James F. Murray had watched an animal with 'a head like a horse or a camel' on a neck raised several feet out of the water.

Many years later Mrs Hildergarde Forbes wrote to Tim Dinsdale:

> It was August, 1912, and I was on a steamer bound for Skagway, Alaska. We were passing along the east coast of Vancouver Island when I saw my Monster. He was going south so I saw him in direct profile. His speed struck me as neither fast nor slow ... I tried very hard to figure out his length and settled on about 40 feet ...
>
> He was definitely snake-like; head raised and steady all the time he was in view; this was several minutes; dark but not black; his mane seemed like seaweed; did not see eye, mouth, etc.; he had a number of 'humps' (probably five to seven) which seemed to rise and fall as he moved. I did not get the impression that he had a large body ...

Finally it was learnt that the Chinook Indians in the area knew the animal well—and had apparently done so for centuries. They called it *hiachuckaluck.* The same specimen could not, of course, have lived for hundreds of years, and there must be a race of them living there or returning there regularly. For reasons that I think were more sentimental than based on actual observation, Caddy was said to have a mate called Amy. She was supposed to be a little smaller than the male, and brownish-grey rather than greenish; she had a horselike head without visible eyes or ears, no whiskers or moustache—as befits a lady—and, what is more, no mane.

I don't think we should take these sexual differences too seriously; but there is no doubt that the local people became very fond of their monsters and said that they were 'lovable and homely' and that they had 'warm and kindly eyes', as the Peer Groves animal did. This, with their manes and whiskers, was a sign that they were mammals. The only reason why they were called reptiles and saurians was the British tradition of the plesiosaur. Had they been seen by Dutchmen they would have been called pinnipeds, and in French waters other bolder theories would have been put forward.

Thus while different observers gave very different descriptions of sea-serpents (because they were seeing different types of animal) different zoologists took different views about their nature (because of different preconceived ideas). These differences had increased since the beginning of the century and seemed to the sceptics to show that the animal was so contradictory and inconsistent that it could only be mythical. There was a new and general wave of incredulity. Then in 1933 came sensational news which raised the hopes of those who believed in sea-serpents. One of these monsters was imprisoned in a Scottish loch. It must have come in by river when it was quite small and grown too large to escape. Many people had seen it.

And now, surely it must be captured. But those who thought this did not know Loch Ness. It is the largest volume of fresh water in Britain, twenty-two miles long, more than a mile wide, with an average depth of about 500 feet and 750 feet deep in places, and full of murky impenetrable water. It was not so easy to fish for the Loch Ness monster.

It has been established that great sea-animals, like their cousins on land, have a fairly restricted habitat. Sea-serpents seem to be no exception to this rule. There are many cases of their being seen in the same waters for many years together: in Massachusetts Bay, in Along Bay and in the Straits of Georgia. Before long we shall meet three monsters in Californian waters: 'Bobo' off Cape San Martin, the 'Old Man' of Monterey Bay and the 'San Clemente monster'. This suggests that some bays are just as good for sighting, watching and even capturing a monster as Loch Ness—or if you like to put it another way—the famous loch is no better than many other places.

We cannot spend much time on the Loch Ness monster, which I shall write about at length in a separate book about freshwater unknown animals. But it was important in that it showed that one type of sea-serpent could live in fresh water,[1] and in the enormous effect it had on public opinion. After the first encouraging reports, the atmosphere was soon vitiated by blatant hoaxes, gibes at the expense of the Highlanders' fondness for whisky and gift for second sight. There was a flood of journalism, much of it sensational or ill-informed, and peremptory statements by so-called experts. In this glare of dubious publicity genuine research was almost impossible. The best and worst features of the whole history of the sea-serpent seemed to have been compressed into a few months.

One of the happier effects was to stimulate a great deal of literature on the subject, some of it very interesting. Dr Oudemans, now seventy-five, wrote a series of articles and a pamphlet to show that the monster was none other than a specimen of his long-necked long-tailed pinniped, *Megophias*. Commander Gould bought a motor-cycle to carry his 17-stone frame to make inquiries on the spot. He returned convinced that the monster was a sea-serpent that had strayed into fresh water. But he had changed his opinion about its zoological nature and wrote in *The Times* of 9 December 1933:

> On the whole, despite the advocates of a 'surviving plesiosaur', this and other 'sea-serpent' cases suggest to me nothing so much as a vastly enlarged, long-necked marine form of the common newt. However that is a matter for a qualified zoologist with an open mind.

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[1] In fact Olaus Magnus had already reported a sea-serpent in Lake Mjösa in Norway, 'string-of-buoys' monsters had been reported in Icelandic lakes, the Red Indians believed that gigantic snakes lived in North American rivers and lakes, and Dr Petter Olsson showed that an undoubted *Megophias* lived in Lake Storsjön in Sweden.

This was something quite new. It had been thought to be a fish, a reptile or a mammal, there had even been the suggestion it was an arthropod, but no one had dreamt of an amphibian. The nearest was perhaps Dr James Anderson of the *Nestor* who had described his monster as 'an enormous marine salamander' but this seems to have been chiefly by way of comparison. Commander Gould's reasons are not much stronger, but fortunately for him 'a qualified zoologist with an open mind' took him at his word, and Dr Malcolm Burr developed the theory in a long article in the *Nineteenth Century*. Malcolm Burr was Professor of English at the School of Political Economy in Istanbul; he had travelled all over the Near East, written travel books and translated from French, Russian, Turkish and Serbian, while remaining a keen foxhunter and good cricketer. He was also a scientist, co-founder of the International Congress of Entomology in Brussels, and elected vice-president of the Royal Entomological Society in 1912 because of his many papers on insects. He was thus just the open-minded zoologist for the job.

He was familiar with the problem of the sea-serpent. After citing the most eminent works on the subject and refuting the arguments against its existence, he gives a brief history and mentions the most celebrated cases. Perhaps because of his cosmopolitan background he rejects the pet British theory of a surviving plesiosaur. 'I refuse,' he said, 'to swallow an explanation far less digestible than the sea-serpent itself.' There are certain striking facts upon which he bases a quite different theory:

> (1) Pontoppidan's drawing, Captain M'Quhae of the *Daedalus*, Dr. Matheson, and most of the Norwegian reports, but not all, allude to the existence of a *mane*, *frill*, or *ruffle* on the neck, recalling a bunch of seaweed.
>
> (2) Captain Pearson, of the *Osborne*, saw a row of *triangular points like a toothed crest on the back*. Captain Cringle saw *short fins on the back*. Captain Dean saw a *triangular dorsal fin*. Messrs. Meade-Waldo and Nicholls [*sic*] saw an enormous *crinkled fin, flabby like rubber*. The Nova-Scotian cases report *small lumps on the back*. These allusions to a sort of dorsal fin are always on the biggest specimens. The fin is not kept rigid with rays like that of a fish, but is soft and flabby.
>
> (3) Egede's specimen had *flappers*. Matthews saw two armlet appendages, dangling. Bell saw *flappers*, and he and Matheson refer to a *lizard-like body*.
>
> (4) The smallest are described as from 18 to 20 feet in length, but many accounts give 60 feet, and some run to 100 feet. The difficulty in estimating size at sea is notorious. Even a sea-serpent is young once.
>
> (5) The presence of a fin on the back seldom coincides with the fringe on the neck, nor is it recorded for the smallest specimens.
>
> (6) Egede's specimen, which *blew like a whale*, had no fringe.
>
> (7) They often occur near the coast, as would be expected with lizard-like creatures with legs or flappers.
>
> (8) Most agree in giving the creature a dark brown or blackish brown back with

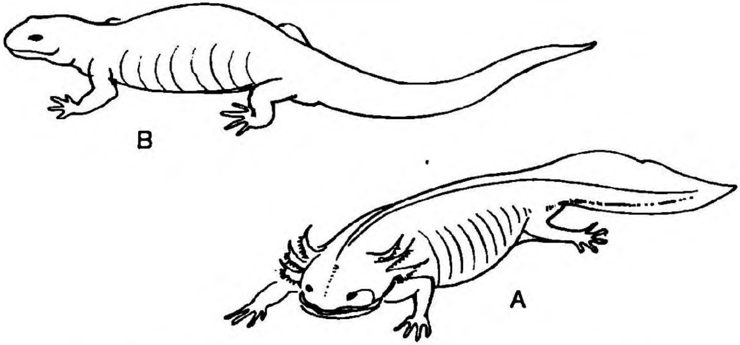
paler under-surface, with white markings, the skin not scaly, but sometimes rough.

(9) The big ones, 60 to 70 feet long, from the Sound of Sleat, have neither fin or crest.

(10) Most agree in giving the animal a very flexible body, with a long neck, small head and big eye.

Now is there any known creature which fulfils all these conditions? Is there any animal of reptilian appearance with four flappers or feet which lives in the water, yet sometimes blows like an air-breather, which sometimes has a frill or mane round the neck and sometimes a notched crest on the back? All agree that it has a reptilian appearance; but have any known reptiles those strange plume-like fringes round the neck which have struck so many observers? Now, these are the key to the problem.

Have you ever seen a tadpole? Tadpoles are the larvae, or young of frogs and toads. They live in the water and breathe by external gills, which appear as paired fringes like plumes at the back of the head. Frogs and toads are not reptiles, but belong to the class known as *Batrachia*, sometimes as *Amphibia*, which is characterised in particular by the gills of the larvae which are replaced by lungs in the adult. Furthermore, normally they have four feet, each with five toes. I do not suggest that the sea serpent is a frog, but there are other *Batrachia*, a tailed group, which includes the salamanders, the curious axolotl of Mexico, the blind *Proteus*, and the efts or newts of our ponds. With the exception of the marine habitat and the great size, the general description of the sea serpent does not differ fundamentally from that of the newts. I see no real reason why our sea serpent should not be a hitherto unrecognised relative of the newts, adapted to life in the sea, developed to a relatively great size, timid, and nocturnal in habit, and consequently seldom seen.



109. Metamorphosis of an amphibian (Axolotl): A, larval form; B, adult

Dr Burr proceeds to provide solid arguments for Gould's theory:

> Newts are lizard-like creatures with four legs, of which the fore pair develop first; the feet have five toes, which in one British species at least are webbed. The feet are pressed against the side when swimming to reduce resistance, which would give a big one a serpent-like appearance. Propulsion is by the tail, which gives the steady forward motion, such as described by many observers. The larvae have three pairs of long, fringed, plume-like external gills, which are not lost till the very last stage of growth, in some cases being retained even into the adult stage. The colour of newts is greenish or chocolate-brown as a rule, with pale under-side, though the coloration, especially of the belly, is often very brilliant in the males when breeding. The texture of the skin is often rough, but not scaly. Finally, the adult male is provided with a notched crest along the back, which attains its greatest development during the breeding season, dying almost or completely away after the summer ...
>
> So our sea serpents with fringes may be immature, the serpent-like ones adult, and those with fins or crest upon the back full-grown males in breeding kit. There is nothing incongruous with this description in any account of the sea serpent. *Magnificatis magnificandis*, the difference between the *Triton* and *Molge* of our ponds and the sea serpent consists only in the maritime habitat and longer neck. So we may hope to be privileged to see the myth exposed, the truth established, reputations restored, and hypothesis yield to fact.

I think the gist of this theory deserves quoting here, for though it is less plausible than Oudemans's *Megophias* or J. G. Wood's zeuglodon, it is certainly the most ingenious that has ever been put forward. It is the only one that has attempted to explain the obvious contradictions in different accounts without assuming the existence of several different types. All the same it is open to a good deal of criticism.

It is not so much the size that is the trouble. Admittedly amphibians are nowadays pretty small, so that the Japanese Giant Salamander (*Megalobatrachus*) seems a monster, though it is not more than 5 feet 6 inches long. But it was not always thus. The amphibians, those emancipated fish which conquered dry land, appeared at the end of the Devonian Period, some 275 million years ago. They were then represented by the Stegocephalia or 'roofed-heads', so-called because the cranial bones were welded together to form a strong roof, which expanded considerably in the Carboniferous and Permian Periods, before dying out slowing in the Triassic 180 million years ago. During this time when they were lords of the earth they diversified greatly and produced types of large size and generally covered with scales and bony plaques like crocodiles. The Carboniferous *Eogyrinus* was like a newt but 15 feet long. In the Permian Period some completely land types like *Eryops* evolved which probably returned to the water only to lay eggs. It was like a more compact crocodile and was up to 6 feet long. And in the Triassic Period there were even large amphibians like *Paracyclotosaurus*, which were shaped like an ordinary crocodile 10 feet long. The *Mastodonsaurus* seemed to be an impossible hybrid of a crocodile and a toad, it was 11 feet long, and the skull alone measured 4 feet (see Plate 64).

There was thus a time when amphibians ranged between 6 and 15 feet.

Nor is the unusually long neck a decisive argument against the amphibian theory. Though we do not at the moment know of any with distinct bodies and long necks, there was a time, before we knew of the extinct reptiles, when the same thing might be said of reptiles. And there are serpentine amphibians such as the living caecilians and the Permian *Dolichosoma longissimum* which was very like a water-snake (see Plate 65). There is an undoubted tendency to elongation in this class, and there is no reason in theory why long-necked amphibians should not exist.

The real snag is that there are apparently no batrachians in the sea. Amphibians are confined to fresh water, for the very good reason that they have bare skin. Now skin is a semi-permeable membrane, through which some biochemical changes can take place fairly freely. The batrachians can breathe through the skin, and in some families of salamanders, such as the Desmognathidae and Plethodontidae, the lungs and gills have so atrophied that they can breathe in no other way. In salt water this has very serious consequences. The osmotic pressure is greater in the sea than in the body fluids, which would lose water through the skin, and the animal would dry up and die.

Some batrachians nevertheless manage to live in brackish water, either permanently, like the frog *Rana cancrivora*, or for several months, like various toads and even the Edible Frog (*Rana esculenta*). The complex mechanism, which, as Ray Tercafs has shown, makes this osmo-regulation possible need not be explained here. The trematosaurs which were Stegocephalia of the Lower Triassic, must have developed this system considerably, for they made a definite attempt to return to the sea. G. Säve-Söderbergh has shown that their remains are found all over the world, especially in Spitzbergen, often in deposits containing numbers of sea-fishes. This implies they lived in the sea. But as the tadpoles of our present amphibians can only grow in fresh water, it is most unlikely that they lived entirely at sea. They must have come up rivers to lay their eggs in fresh water and let the tadpoles live there until their metamorphosis into adults. All the trematosaurs have a distinct tendency to elongation, and the most highly developed would look like pointed-nosed crocodiles.

If there is a very large amphibian living in the sea today it must have descended from the great Stegocephalia of the beginning of the Mesozoic Era. The trematosaurs were not particularly big, but, as the Stegocephalia tended towards life in the sea and towards giantism, it is not impossible to imagine that a gigantic trematosaur might have evolved and survived. Admittedly the lack of fossil remains of Stegocephalia in deposits later than the Triassic makes this theory less likely than that of a surviving plesiosaur, whose group did not become extinct until 100 million years later. In fact the trematosaur would be just as unlikely to survive as its contemporary the coelacanth—and we all know how unlikely that is.

As the trematosaur would have to come to fresh water to breed, this theory will have to be carefully considered when we come to examine that misnomer the freshwater 'sea-serpent'.

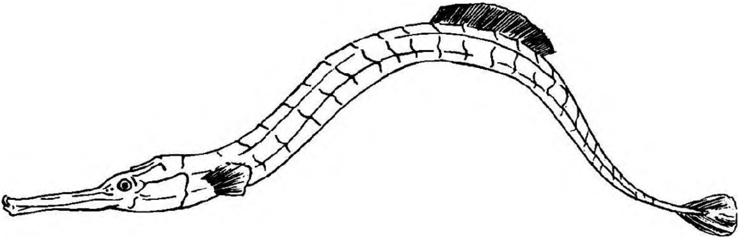
In any case Dr Burr's theory cannot apply to those sea-serpents which have clearly been seen to undulate vertically, for like fishes and reptiles, which are placed on either side of them on the evolutionary ladder, the amphibians undulate horizontally, as the shape of the newt's tail shows.

The theory of the amphibian sea-serpent was not taken up by any interested parties, and six months later Dr Burr was dead at the age of fifty-six.

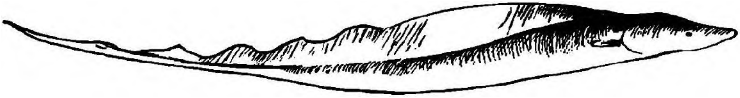
Meanwhile Dr Georges Petit in France was putting forward a different and no less original theory. Much influenced by Tran Van Con's story, he described the sea-serpent thus in February 1934:

> The body would be made of horny plaques, not joined together, and giving the appearance of annulation, hence the animal's smooth and shining appearance ..
>
> On the flat back there would be fixed at very long dorsal fin, shown on some drawings, and interpreted at other times as a mane. Moreover, is there not room to wonder whether what have been taken for the extraordinary undulations of the body of *Megophias* may not be flexible and graceful bends in this fin when the animal breaks the surface of the water? The shape of the animal thus called to mind seems to agree fairly satisfactorily with the type provided by certain fishes of the group of pipefishes, and that *Megophias* could be a giant species derived from them and living in the depths.

Incredible though it may seem, this was the first time that anyone had suggested that what looked like a series of vertical undulations breaking the surface, *could* well be due to rhythmical bends in a flexible and continuous



110. Pipefish



111. *Gymnarchus niloticus*

dorsal fin of an animal undulating horizontally. I was very struck by this when watching the evolutions of a Suyo (*Gymnarchus niloticus*) in the magnificent Aquarium of French Overseas Territories. This eel-like fish, which is more closely related to the herrings and salmon than to the eels, in fact a freak Mormyrid, has a dorsal fin right along its body. It moves by means of fairly tight undulations along this fin which is both high and supple. The body meanwhile remains almost stiff; at most it may bend in wide horizontal curves, especially when turning.

All the same, Dr Petit's explanations will not hold water for those sea-serpents on which one can clearly see several solid humps, nor for those which have definitely been seen to move in vertical undulations.

Dr Petit was not, of course, the first to think that the sea-serpent was a gigantic fish, but hitherto nobody had suggested anything except an enormous eel. To suggest that it was a cousin of the pretty little seahorse was quite new. The general shape of the *Valhalla* monster and the horny plates on the carcase in Indo-China seem to have led Dr Petit to make this choice. The pipefishes, with their long rigid body and little waving dorsal fin that drives them along, have the same outline as the animal seen by Nicoll and Meade-Waldo, and, what is more, are armoured with bony plates. His chief reason for looking among the fishes was his reluctance to admit that it could be an air-breathing vertebrate. He maintains that the Balaenoptera cannot dive for longer than half an hour.[1] 'Even though *Megophias* may be extremely rare,' he goes on, 'it is not possible in an age when numbers of ships cross the seas that this animal which is obliged to come to the surface for its supplies of air, at regular intervals, would not be seen more often.'

I have already dealt with this argument. In fact ships are not so common as all that, compared to the immensity of the ocean; and they always follow the same tracks. Nevertheless, sea-serpents have been reported several times a year for a century and a half; they are certainly seen much oftener than many cetaceans in the family of beaked whales. Moreover Dr Petit seems to forget that many sea-animals do not show themselves at all when they come up to breathe, so gently do they break the surface. I have noticed at Antwerp Zoo how, when a manatee or turtle comes to breathe, not only does no part of the animal stick out of the water, but there is not even a ripple on the surface when it is calm. The same must be true of some cetaceans which do not 'blow' but just open a breathing-hole on the surface. The most that one would see emerging for a moment would be their dorsal aileron, and that only when the sea was almost flat.

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[1] We now know that the Blue Whale can remain under for as long as 50 minutes, the Sperm-whale for 75 minutes, the Greenland Right Whale 80 minutes, and the Bottle-nose Whale 120 minutes—two hours!

Dr Petit's arguments that the sea-serpent 'could not be a pelagic animal' are no stronger. He thinks its normal habitat must be 'the great oceanic depths'. Not only is there nothing to justify this assertion, but everything we know about abyssal fauna contradicts it: in that terrific pressure only small and fragile creatures have developed, and this is probably an inherent necessity in this inhospitable medium. The abyss is no place for the sea-serpent.

Another happy consequence of the echoes about the Loch Ness affair that rang round the world, was another crop of reports of Nessie's rival, the sea-serpent, especially from the English-speaking world. I shall deal first with those from the British Commonwealth before World War II, and then with American ones.

The first report comes from the waters between the Australian mainland and the Great Barrier Reef. The account by Mr Oscar Swanson of Townsville, Queensland, was published in the *Victorian Naturalist* by Mr A. H. E. Mattingley.

On 18 August 1934 Mr Swanson went to fish with his son Harold and William Quinn. Soon after they had left Townsville breakwater in their motor launch they saw four dark objects in the water beyond the Fairway Beacon, which was half-way between that port and Magnetic Island. Puzzled, they went closer and found that it was a sea-monster. They got within 150 yards of it before it 'submerged, going down like a submarine, sinking slowly'.

> Then we thought it would come at us, and we turned to make for the Beacon, which has a ladder to the top on which a lamp is lit.
>
> We were wishing that we were in a speed boat. We stowed the little fellow up forward under the bit of decking we had, and hoped for the best. I might mention that the sea at this time was smooth as glass. After about five minutes the monster arose again in the same place (coming up just like a submarine). We were about three-quarters of a mile past the Beacon; on reaching it we caught hold of the ladder and watched to see what movements the monster would make. After waiting half an hour and seeing no movements, excepting the head swaying from side to side, as if watching us, we decided to make back to town, get rid of the boy, and get a camera, as it looked as though the monster would stop there all day. On reaching the jetty wharf, I rang Mr. Jim Gibbard, sub-editor of the *Townsville Bulletin*, who picked up a press photographer, Mr. Ellis, and, armed with two cameras, we once more set out (without the boy).

But the monster seemed to have been disturbed by S.S. *Marella* coming round Magnetic Island, and they saw nothing but two dark objects about 20 feet apart, which 'may have been the monster as it put its head up near a man fishing in a small dinghy just outside the breakwater at 3.30 p.m.; and he lost no time in getting home'. Mr Swanson gave Mattingley a very detailed description.

> You will see, by the rough sketch submitted, what the monster was like. The head rose about 8 feet out of the water, and resembled a huge turtle's head; the mouth remaining closed. The head was about 8 feet from the back of the head to the front of the mouth, and the neck was arched. The colour was greyish-green. The eye (we could see only one, being side on) was small in comparison to the rest of the monster. The other part in view was three curved humps about 20 feet apart, and each one rose from 6 feet in the front to a little less in the rear. They were covered with huge scales about the size of saucers, and also covered in barnacles. We could not get a glimpse of the tail, as it was under the water.

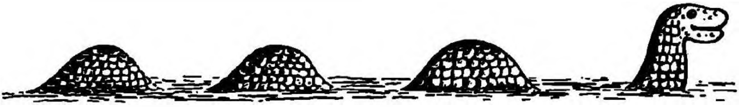
Mr Swanson told Mattingley that he saw neither fins nor legs. As the animal was motionless on the water he could not see how it swam. It had no mane, but a dark line along its spine. The scales shone in the sun and seemed to be 'butted and perpendicular'. Some of the barnacles were as big as soup-plates.

Swanson was able to give Mattingley some other confirming reports, and these were further amplified by details published by Tim Dinsdale in *The Leviathans*. From this it appears that it was seen a week earlier at Mourilyan Harbour, where it swam round a fishing party in a large launch, almost 50 yards from them and making a loud noise. A week later the *North Queensland Register* reported that it had been seen near Bowen, and Dinsdale tells us that the witnesses were H. Hurst and two others, who said it was about 30 feet long and lifted a large turtle-like head about 8 feet out of the water. Its body was like 'a huge armoured hose'. Dinsdale also tells us that,

> Later three separate parties of fishermen farther north, near Townsville, reported seeing it on the same day. One man told the local newspaper: 'Its head resembled a huge turtle more than anything else, and was slightly arched. Farther along three smaller dark objects were seen, giving the appearance of a Monster of the sea with a series of humps.'

A week after the Bowen encounter the *Trentbank*, on passage to Canada with a cargo of sugar, cabled Townsville that she had met it off Mackay. Some weeks later the *Rahata*, a motor-boat coming north from Brisbane to the Palm Islands, saw it nearer to the Great Barrier Reef. A man called Mills who was on deck at the time said there were two big grey-greenish lumps 25 feet apart and covered with scales as big as saucers.

Swanson's drawing is rather naïve and not without unconscious humour,



112. The Townsville sea-serpent, 1934, after Oscar Swanson

and looks as if it belongs in a mediaeval bestiary or a cartoonist's album. But not everyone can draw a realistic picture, and the whole of his account, his attempts to have the beast photographed, and the many corroborative reports argue for his good faith. The story rings true and has details which do not seem to have been invented. For instance there are the barnacles. Naturalists—though by no means all of them—know that coronules or giant barnacles are found on whales, so it would not be odd if they attached themselves to a sea-serpent.[1]

The oddest thing about Swanson's account is that the scales on the humps run in horizontal rows. As I have already pointed out in the *moha-moha* affair, this is quite impossible in any animal that must bend, and such an arrangement is found only on the shells of tortoises and turtles. But as the scales are normally disposed on the neck this may just be due to inept drawing. Unfortunately Swanson's phrase 'butted and perpendicular' is far from explicit, and does not really help much. If the monster was really humped and scaled as he has depicted it, it is quite unlike any other sea-serpent, let alone any animal known to science. But the witness who described it as like 'a huge armoured hose' makes me think it may be a 'cetacean centipede'.

Mr Mattingley's comments are no less odd than the description he quotes, at least to a zoologist:

> On many occasions I have encountered in the tropical seas of Australia several species of sea snakes mostly under 8 feet in length. When we remember that most of the land snakes of Australia are under 6 feet in length and many are venomous, as also the sea snakes whose tails differ from the whip-like structure of land snakes in that they are rudder-like and in shape resemble the tail of an eel to enable them to propel and balance themselves in water, then we are confronted with the problem of the shape of the Sea Serpent's tail and whether that creature, if it exists, is venomous or not. It would in all probability possess a rudder-like tail as a means of propulsion, and, doubtless, be a constrictor.

Even in 1934 there was still a naturalist (or at all events a contributor to the *Victorian Naturalist*) who supposed that an animal appearing as a row of humps could be a snake. I need hardly repeat the reasons why it could not.

---

[1] But so far as I know the biggest coronules are only 2 inches in diameter. Ones as big as soup-plates would be unknown monsters themselves.

In Filey, Yorkshire, there was a very unusual occurrence at the beginning of 1934. After fishermen had seen an unspecified monster three miles out at sea, the *Daily Telegraph* went on to report on 1 March:

> Mr. Wilkinson Herbert, a Filey coastguard, says he saw the thing on shore last night; a dark moonless night. He was walking along Filey Brig, a long low spur of rocks running out into the sea, when:
>
> 'Suddenly I heard a growling like a dozen dogs ahead, walking nearer I switched on my torch, and was confronted by a huge neck, six yards ahead of me, rearing up 8 feet high!
>
> 'The head was a startling sight—huge, tortoise eyes, like saucers, glaring at me, the creature's mouth was a foot wide and its neck would be a yard round.
>
> 'The Monster appeared as startled as I was. Shining my torch along the ground, I saw a body about 30 feet long. I thought "this is no place for me" and from a distance I threw stones at the creature. It moved away growling fiercely, and I saw the huge black body had two humps on it and four short legs with huge flappers on them. I could not see any tail. It moved quickly, rolling from side to side, and went into the sea. From the cliff top I looked down and saw two eyes like torchlights shining out to sea 300 yards away. It was a most gruesome and thrilling experience. I have seen big animals abroad, but nothing like this.'

As this story appeared just when the publicity about Loch Ness was at its height, one might feel cautious about accepting it, were it not that in every respect but one it fits extraordinarily well with what we already know about the tailless *Megophias.* While most people thought the Loch Ness monster to be a huge long-tailed reptile, Mr Herbert described his monster growling like a mammal and looking like a huge sea-lion with a long neck. Only as regards the eyes does he seem to be exaggerating, for even the brightest eyes would hardly shine like torches at 300 yards. Perhaps the phrase 'like saucers' should therefore not be taken too literally. Even quite small carnivore's eyes would look very striking if they appeared on a moonless night in a torch beam.

In Scotland in 1934 a strange sea-creature was seen in Campbeltown Loch, an inlet near the end of the Kintyre peninsula. John MacCorkindale, a local naturalist, was talking to the country postman, Charles Keith, on the road beside Kilkerran Bay, when they heard a loud splash in the sea. Some 300 yards from the shore a huge creature was beating the surface of the water with the front of its body. Several times it raised itself up about 12 feet above the waves and fell back with a splash before it finally disappeared.

Mr MacCorkindale, who had a good reputation as a trained observer, told the *Scotsman*'s correspondent that the front part of the animal was like a giraffe: it had a long thin neck, with a little head and very small ears. It was a bright silvery colour with thin dark streaks round the body. One could just see a sign of a dorsal fin, but no other fins were visible. They did not see the body nor the tail, but, from the proportions of the part out of the water, Mr MacCorkindale reckoned the total length at about 30 feet.

No reptiles, let alone mammals, are a bright silvery colour. Among the sea-vertebrates this is the monopoly of the fishes. In any case this animal certainly seems to be a fish. As it appeared so briefly, the head may well not have been properly observed, and what was seen may just have been the death-throes of an oarfish, or some other rare fish, on the surface. This at all events is what the colour and dorsal fin suggest.

The next event has the most respectable credentials. On 5 August 1936 Mr H. E. Witard, Chairman of the Norwich Watch Committee and former Lord Mayor of that city, was on holiday at Eccles in Norfolk with Mr Charles Ammon, M.P., Mr A. Gosling, a former M.P., and three other people. Here is the *Daily Mirror*'s version of Mr Witard's account:

> We were standing on the beach at 7.25 in the evening when I noticed an unusual form travelling swiftly about one mile from the shore in a northerly direction. I am an old sailor and could not be deceived by a shoal of porpoises. It was a serpent beyond question.
>
> Looking at it from a distance, it appeared to be about thirty or forty feet in length and was skimming the surface of the water in a wormlike movement. Its speed was terrific. It would not be an exaggeration to say it was anything from ninety to 100 miles an hour.
>
> It was a perfectly clear evening and six of us watched it take a straight line parallel with the coast.

We can draw several conclusions from this report:

(1) Mr Witard is honest. (2) A journalist has taken down only very approximately what he actually said. (3) If 'serpent' means anything more than 'serpentine animal' he is certainly mistaken. (4) The estimate of speed is very exaggerated.

(1) is because of the witness's credentials, and (2) because it is what *always* happens. (3) follows, because even a zoologist would be hard put to say 'beyond question' what an animal was when it was seen breaking the surface, and because the witness would not have said a 'wormlike movement' if he meant a 'snake-like movement', and this seems to mean that it moved like a caterpillar, in vertical undulations. (4) is because the fastest known large sea-animals are less than half as fast as this. Whales usually do 20 to 25 miles an hour. Killer-whales, the fastest of the cetaceans, may reach 35 miles an hour or perhaps more at a spurt, but certainly not 45, let alone 50. And this is a long way from 100. May not this monster which was 'skimming the surface of the water' have been—for once—a flight of birds?

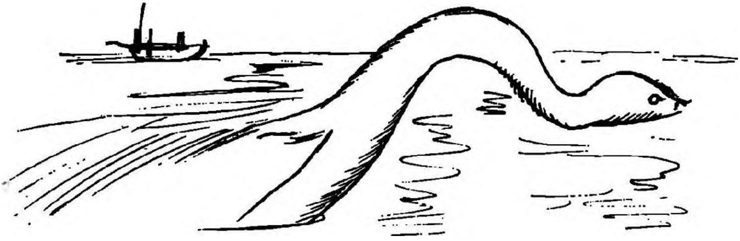
Yet there were other witnesses who confirmed that a sea-serpent was off Eccles that day. When he read of Mr Witard's encounter in the *Eastern Daily News*, Colin N. King wrote to that newspaper that he and his wife and daughter had been on the dunes at Eccles between two and three o'clock that afternoon, when they saw 'a black snake or wormlike object travelling at a terrific speed on the surface of the water, about half a mile or so out, going in the direction of Happisburgh'. They thought it was about 30 feet long and were struck by its very great speed. But they did not give such staggering figures as the ex-Lord Mayor of Norwich.

The next incident was not revealed until another sighting off the east coast of England in 1966 prompted Mr R. W. Midgley of Boston, Lincolnshire, to write to the *Skegness Standard* and 'recall a summer school holiday I spent at Trusthorpe [Lincs.] during 1937 or 1938'. One morning he was walking along the sea-wall when,

> probably no more than 400 yards from the water's edge, I saw what I can only describe as a sea monster.
>
> No head was visible, but I saw quite clearly what appeared to be four or five half-links of a partly submerged, huge snake-like body.
>
> It disappeared after about five minutes. I am quite certain I had not witnessed a school of porpoise, dolphin or the like.

It is a characteristic 'string-of-buoys' sea-serpent.

Then we have another incident a little further south off the Suffolk coast. On the morning of 21 October 1938, two old Southwold fishermen, Ernest Watson and William Herrington, had gone to lay their nets near the South Barnard buoy in a very calm sea. They returned to land, most excited. From their terrified statements, which were reproduced in different but basically similar versions in different newspapers, it appears that a big head suddenly raised itself out of the water some 40 yards from them. It towered over them, but made off like a torpedo 'at a terrific speed', which they reckoned at 30 knots (which is much more reasonable than that of the Norwich dignitaries). The animal made such a wash when it dived that they could see nothing but a back humped like a camel's. It was grey and must have been about 60 feet long.

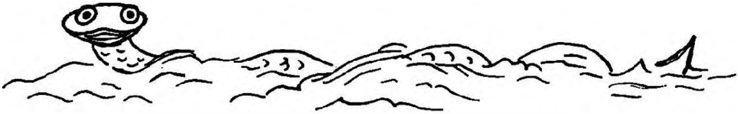


113. The Southwold sea-serpent, 1938, after Watson and Herrington

The next affair was further north, off the East Riding of Yorkshire. The witness, Mrs Joan Borgeest does not give the date except to say, 'The time was shortly before World War 2, when there was a severe earthquake felt ... in many parts of the Country.' 1938 perhaps? But Mrs Borgeest did not reveal her story until after the B.B.C. broadcast in 1961, when she wrote to Maurice Brown, who very kindly let me see all his private papers on the subject. At the time in question she was living at Skiffing, two and a half miles from Easington, and the vast sandy beaches were very empty. One day she was lying watching the sea, while the children under her care were playing some little way off:

> Suddenly I saw a huge creature rise, it was of a green colour, with a flat head, protruding eyes, and a long flat mouth which opened and shut as it breathed; it was a great length and moved along with a humped glide.

This clearly means that it moved with vertical undulations as we see from her delightful sketch, which is remarkably like Michael Peer Groves's picture of his friendly maned sea-serpent. When Mrs Borgeest called out to other people nearby, it seemed to frighten the beast, which dived and did not reappear. She was so teased, when she told them what she had seen 100 yards away, that she said no more about it until encouraged by the radio discussion of the subject.



114. The Easington sea-serpent, ?1938, after Mrs Borgeest's first sketch. She subsequently modified it so that the animal had only one curve to its back

Brown and Chisholm's broadcast produced another report from the period just before the War. In 1939 Mr Waymark of Tunbridge Wells, Kent, was staying at Étables in Brittany with his wife and daughter. One day he was waiting on the balcony of their hotel room while the ladies were getting ready to go out, when they heard him shout, 'Come quickly to see this!'

> We dashed out [wrote Mrs A. F. Waymark to Maurice Brown] and saw what one or two of your contributors to 'The Great Sea Serpent' programme accurately described and what looked very like the picture on page 15 of '*The Radio Times*'[1] (though after this length of time I don't remember the white underneath). A huge creature like a serpent was swimming rapidly along on the surface of the water, weaving in and out and leaving quite a wake after it. We estimated it would be

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[1] The famous picture of the *Daedalus* monster.

at least 20 feet long—had a splendid view of it and watched it till it was out of sight, swimming towards the Atlantic.

In this same summer of 1939 a large number of Scots saw a sea-serpent in the Firth of Forth. At the beginning of July some fishermen said they had seen a big brown animal with a horse's head and large prominent eyes off West Wemyss. The same day a little girl in Dunbar told her father that something was moving in the water 400 yards from the shore. He went and saw the animal which remained there for nearly an hour and a half. During the following days a number of girls working in a factory nearby also saw the strange creature.

The press merely concluded that the Loch Ness Monster had moved house.

In order to assemble here a quite exceptional series of similar incidents I have taken liberties with the chronological order of these British reports. In point of fact, immediately after the Loch Ness affair made news, the Cunard liner *Mauretania* had met things called sea-serpents three times during its cruise to the West Indies in the winter of 1933–4.

The first monster was jet black and was seen at 13.20 hours on 30 January 1934 by the two officers on watch a mile from St Eustatius Island. It was 65 feet long and '6 ft. broad amidships', and it raised its head and neck more than 6 feet out of the water. '45 feet of the body, which had a six ft. beam, could be seen in curves on the surface of the sea.'

The second monster was seen on 2 February off La Guaira, the port nearest to Caracas: it seemed to be no more than 25 feet long, but its great width, its lateral fins and wide gaping mouth enable us to recognize a manta ray.

The third monster, which was a good 60 feet long, and which appeared above water as four humps, each with its fin, was seen about 600 miles east of Nassau in the Bahamas during the following March. It reminds one of a series of many-finned monsters.

These three encounters were recorded in the ship's log, which may still be seen in the Cunard Line's archives. Considering the relative rarity of such encounters it is very surprising that one ship should have made three in three months. But there are several plausible explanations.

First of all, as the first witnesses were the first and third officers, S. W. Moughtin and O. J. W. Caunce, whose official position was a guarantee of their honesty, the crew and passengers took it seriously and were on the look-out thereafter. Thus they were more likely to see something, especially during the idleness of a long cruise and when watching from the considerable height of a large liner.

It is also possible that unknown animals may be attracted, as sharks are, by the quantities of kitchen waste which every great liner throws overboard, and it also seems likely that the large screws of a really big ship may make a deeper note than the smaller ones of smaller ships. There is no doubt that sea-animals dislike high notes. When a ship starts up its asdic all the cetaceans—dolphins and so on—flee from her, their own ultra-sonic transmissions being 'jammed' by man's pirate radio.

Another liner, a French one this time, the *Cuba* of the Compagnie Générale Transatlantique, also met a sea-serpent three months later in July 1934, 750 miles south-west of the Azores. At the time the captain of the *Cuba* sent a laconic communiqué to the press, but we might have heard no more about it, because the principal witness, the second captain, P. Maguerez had a horror of publicity.

Fortunately I am now able to give all the details of this very interesting affair, thanks to my friend Jean Delaborde, retired chief paymaster in the French Navy. Besides being a great traveller with a fondness for such inhospitable lands as Patagonia and Tierra del Fuego, Delaborde shared a taste for oddities and enigmas with Commander Gould, whom he much admired. So when he heard that a French liner had met a sea-serpent he wrote to Captain Maguerez, who replied at once, but 'because, and only because, you are a naval officer, and your letter leads me to think that you are not joking'. He knew the fate generally reserved for those who had claimed to see sea-monsters, and rather than expose himself to mockery and have experts tell him what he had 'really' seen, he preferred to hold his tongue like the obstinate Norman that he was.

> I have not [he wrote] told anybody except the commander of the *Cuba*. I loathe publicity: 'what we have seen' exists, and I think that the scientists who talk of mass hallucination and so on are narrow-minded men and most unfair. Whether they like it or not, whether they believe it or not, is all the same to me, sir ... If this account, written in haste, interests your friends, pass it on to them, but whatever you do don't mention it to journalists.

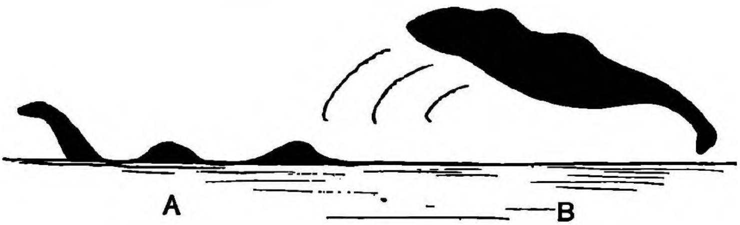
I don't think that Delaborde or I are betraying his confidence in publishing it now. He died too soon after the war for me to be able to ask his permission, but the whole point of this is to prove his honesty, and his report is also a very valuable one. As he himself admits, the report is hastily and negligently written. But this total lack of literary grace is part of the letter's authenticity:

> This is exactly what happened:
>
> That day in July, I can't now remember the date, I had the watch from 4 to 8; and I was finishing working an astral fix (working them out on watch was forbidden, but it was so clear and so fine): it was broad daylight by 5.20—and I had my eyes down on my notebook, in front of the window, when the lookout-helmsman called to me: 'Captain, *a steamer ahead!*' Now a few seconds before there had been nothing, for I had been looking up from time to time; you'll see how big the animal was when I say that at that moment it was a good 2 miles

> from us. I looked up and saw the beast in question *completely* out of the water, before it dived without making the least splash, this was what attracted my attention, for a whale makes as much splash as a 305 shell when it leaps like that. I took my glasses and followed its wake; the sea was smooth as oil; it had dived in the same direction as the ship and, a few moments later, it reappeared on the port bow about a mile off, swimming fast in the opposite direction. I reckoned its speed as being at least ours, that's to say 15 knots. At that moment its neck and two humps appeared completely: at the helmsman's shout the other, free, seaman ran for his glasses too. It dived again four times at very short intervals, and during one of its appearances, about 800 yards abeam, we could watch it at leisure, for it remained on the surface several seconds and bent its neck forward before diving; here is its exact silhouette on the surface [Fig. 115A]. The head turned and looked at the ship, but the body was *absolutely rigid* and black in colour, not the least undulation. If I had had a camera or a little ciné-Kodak I could have had a 30-second film, for 800 yards is not far when one is 56 feet up. Now, when I saw it out of the water, it was very rapid, it seemed to me to have this shape, very roughly, underneath [Fig. 115B], but it is certainly not a serpent, for it was too thick for its length; I reckon its diameter at 12 to 16 feet, and I assure you it was no mirage.
>
> It is frankly difficult for me to give you further details for the animal disappeared rapidly northwards, and it was too quick for the captain to get up.
>
> Finally, sir, you will agree that at 5.20 in the morning two helmsmen and an officer of the watch are not drunk nor so sleepy they don't know chalk from cheese. Moreover the captain made his report by calling the men first and me afterwards, our stories agreed—and we had not already talked about it in the wardroom—and I assure you that friends who know me are just as convinced as I am of the existence of this strange and enormous animal.

In the heat of his story Captain Maguerez has quite forgotten to mention the beast's length, but from his sketch and what he says about its thickness we can estimate it at about 60 feet.

As on all the occasions when the whole of a great serpentiform is seen, whether through clear water, leaping clear of the surface or lying on the shore, this report is of the first interest. It is explicit evidence that one type of sea-serpent has the following features: (1) a small pointed head on a long thin



115. Two views of the *Cuba* sea-serpent, 1934, after P. Maguerez

neck; (2) a rather thick and bulky oval body; (3) two big humps some way apart on the spine; (4) no tail at all, or at any rate a very small one.

Only the last point can there be any argument about; for as it leapt the beast might have hidden its tail with its body, but this is most unlikely, as it 'dived in the same direction as the ship' and must therefore have been seen in profile.

It is a pity that it leapt so quickly and so far away that Captain Maguerez is not able to tell us anything about the shape of its limbs, nor even if it had any If it did, they must have been held flat against the body. At all events he confirms once again that there exists a sort of tailless *Megophias*.

The next liner to meet a sea-serpent was the Danish-American Line's *Amerika*. This happened on 26 October 1934 as she was approaching St Thomas in the Virgin Islands. Among the passengers leaning on the rail was Mr G. Cooper of Budleigh Salterton, whose account appeared in the *Listener* in 1953:

> The weather was bright and clear and at a distance of about a quarter of a mile, travelling on an opposite course, an elongated mass, sixty to eighty feet in length, broke surface in a flurry of foam and spray. It had a long serpentine neck thrust upwards, and a flattish head which, however, was flexed and gave it an equine appearance. Behind the neck a series of six or more large, protruding humps, chocolate brown in colour, moved forward in sinuous motion, giving an illusion of speed which was probably not more than fifteen to twenty knots.

Mr Cooper noted this down in his diary at the time, and his description was confirmed by his wife and several other witnesses.

At first sight it is hard to see how this animal with six humps could be the same as Captain Maguerez's with only two, unless only the first two were real and the rest were an illusion created by the wash.

There is, however, another possible explanation, since the animal seems to be related to the pinnipeds. Photographs of seals and sea-lions in motion have shown that their fat bodies may sometimes appear as a single gentle curve, sometimes as several sharper curves according to the folds of skin and layers of fat, and sometimes as a series of close-moving waves—what are called turbulence waves—created by surface friction of the water when fast speeds are reached (see Plate 50).

Compared with these important reports from liners, the American dossier of the inter-war years, which I owe entirely to Ivan Sanderson's kindness and generosity, often seems disconcerting, and sometimes quite bizarre.

Charles M. Blackford III, a former officer in the merchant navy, told Ivan that he had several times heard his shipmates talk of strange sea-animals. In particular he remembered the description of the one seen in July 1920 by the *Craigsmere* within sight of the shore between Miami and Fort Lauderdale:

> The Captain, mate on watch, helmsman and some others of the crew saw it. As I remember it they say it was long with dorsal fins somewhat like a porpoise only several in number with its head some distance ahead of the body and partly submerged.

This is clearly one of those sea-serpents with many (doubtless lateral) fins and a round head, which have been described so often before. It is hardly surprising to find one on the Atlantic coast of the United States, since here we are in the warm waters of Florida, a long way from New England with its own very different type of sea-serpent.

It is that type, with its many humps, flat head and conspicuous vertical undulation which we expect to find when there is a report from Massachusetts in 1934. But Thomas Ratcliffe and Eric Warbasse, two Harvard students, who saw one 30 feet long and 2 feet 6 inches thick in Vineyard Sound near Woods Hole, said it had large eyes and a long tapering tail—most unlike the New England type with its very inconspicuous eyes and bilobate tail.

The following year, off Norfolk, Virginia, half-way between Massachusetts and Florida, Lieutenant W. C. Hogan of the coastguard vessel *Electra* saw an animal 40 to 50 feet long with six fins on its back, each 2 feet high and 2 feet 6 inches wide at the base. When they fired at it, the strange animal made no attempt to escape. This also looks like the many-finned sea-serpent. The one seen the same year (1935) near Governor Island, New York State, by a soldier called Silas King travelling on the *General Charles Humphreys*, was a serpent pure and simple. When its body was discovered it proved to be an ordinary python—though God knows what it was doing there, so far from its native land.

In 1937 the sea-serpent returned once again to Massachusetts but was even more unlike that described with such unanimity a century before. Suddenly there it was, greenish-grey with horns, 120 feet long and raising a tenth of its body out of the water, or so said the three witnesses who saw it near Great Point Light off Smith's Point. They were Edward Crocker, a radio-mechanic, Gilbert Manter, a businessman, and Mrs Raynor Gardiner, the wife of a local lawyer. The first two said they had found a footprint 66 inches by 45—no less! There was said to be a photograph of this footprint, but I must admit that I have not tried to examine it.

In 1939 the press buried the Massachusetts sea-serpent when an enigmatic skeleton 40 feet long was washed up on Herring Cover beach at Provincetown. This reminded an old town crier called George Washington Ready that when he saw the monster in 1886 it had climbed over the dunes and dived into a pool called Pasture Pond, and a certain Captain Enos said that he had known the late monster well in the days when he fished on the Grand Banks and that they had nicknamed it Rover.

But the monster wasn't dead—or at least there were others. For Charles

Ballard of Maine, who had long been living in Sydney in Nova Scotia where he ran a racecourse, wrote to Sanderson on 6 March 1947 as a result of his article in the *Saturday Evening Post* and described how he had been motoring from Sydney to his racecourse at North Sydney when a sea-serpent appeared in the calm water of the harbour between these two towns. It was swimming along 300 or 400 feet from the shore at perhaps, 5, 6 or 7 miles an hour. He compared it with the length of his 150-foot lawn and thought it must be 80 feet long. It was,

> Eel-shaped, practically a gigantic eel, big around as a ten gal. keg ... no part of it over a foot under water, and undulations along the body ... like a small eel I have seen swimming in brooks, but there would be one or two undulations coming up out of the water for 6 or 8 feet and the upper part of the undulations would come 4 or 5 feet out of the water.

And he added: 'No fins, just a BIG eel.'

An eel, of course, generally *does* have fins. An eel, of course, does not raise coils of its body above the surface when swimming normally, for it undulates horizontally. But despite these mistakes, understandable enough in the layman, indeed because of them, Mr Ballard's letter rings true.

Thus the Massachusetts sea-serpent was not dead. Nor was it extinct on the West Coast of America, even though sensational evidence of its death was published in 1925 by *Wide World Magazine*. Two very clear photographs showed what looked like a sea-serpent washed up on the rocks at Santa Cruz in California (see Plate 66). It was a strange creature, with a huge head longer than a man, tiny eyes and a sort of duck's beak. It was joined to the main body by a slender neck that seemed to be about 30 feet long. I doubt if any zoologist in the world would have been able to say exactly what it was, for the external appearance of the animal is little known. But the Museum of the California Academy of Sciences studied its skull and showed that it was a North Pacific type of beaked whale so rare that it has no name but the Latin one, *Berardius bairdi* given it by Leonhard Stejneger in 1883.

This specimen was 36 feet 6 inches long. Apparently the effect of decomposition and heavy seas had been to separate the body from the skin, which had rolled up on itself like a Swiss roll to form the illusion of a long neck joining it to the body, which had also been washed up a little distance away. It is not impossible that man may have had a hand in the transformation in order to provide some sensational photographs—though this was hardly necessary, since the beast itself was hardly any better known than Caddy, the Vancouver Island monster.

The cadborosaurus was still very much alive. In 1934 Cyril B. Andrews of Pender Island saw it swallow a wounded duck, and three years later it was seen by some Californian tourists who had clearly never heard of it. As a result of Sanderson's article Mrs Charles Timeus of Wilmar, California, sent him details of what she and her husband had seen during a visit to British Columbia in 1937:

> Returning from fishing trip, toward sunset, pulling into beach at Sunset Beach, 22 Miles north of Vancouver, we saw a huge Mammal or Monster not more than 25 feet from our boat. It had a large head which resembled a long nosed pig only wider at snout, two large flippers and huge body, we watched it for several minutes, it did not seem alarmed but stayed there until we were out on shore. We searched the dictionary and the only thing we could find that resembled it was a Manatee.
>
> Later two brothers were fishing when they saw what could be nothing else but a 'Sea Serpent' they were close enough to see a head resembling that of a Camel, a small neck and body about size of a large barrel and length they judged between 50 and 60 feet. Knowing these men as we do, we know they would not exaggerate one iota. This was in same location. Farther from shore. Their address: Mr Fred B. Lawrence, Sunset Bay, Via, Horseshoe Bay, B.C. Canada, and Mr George Lawrence, Blenheim, Ont. Canada.
>
> Also a similar Monster had been seen by several fishermen in nearby location, some judging it to be nearer 100 ft. in length.
>
> We, after seeing the Manatee with our own eyes are convinced that Sea Monsters are Not extinct and feel just as certain that there is at least One Sea Serpent still roaming our waters.

The Timeuses' zoology may be weak, but their report is none the less valuable, for it has been influenced by no preconceived ideas. In fact no manatees, nor any related animals, are known in the Pacific, at least since Steller's sea-cow was exterminated in the nineteenth century in the Bering Strait. But could the animal they saw be a surviving specimen of these giant sirenians, which, as we have seen, may be 23 to 30 feet long?

With its distinct but not very long neck, its blunt head and cow's muzzle, its two flippers and bilobate tail with a scalloped edge, its back humped with rolls of fat and its skin like oak-bark, the sea-cow agrees very well with one type of sea-serpent, the many-humped. Nobody, however, has suggested that it was responsible. The curators of the Provincial Museum of Victoria on Vancouver Island made a bad bloomer in 1934 when they thought a basking shark's skeleton belonged to this animal. But I don't think this is why this very arguable theory has not been put forward, logical though it may be. There are three types of specifically marine mammals: pinnipeds, cetaceans and sirenians. *Megophias* and the zeuglodon have made the sea-serpent a candidate for admission to the first two. What about the third?[1]

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[1] Only one person, Searles V. Wood, Jr. has suggested it. In his *Nature* article of 1880, where he proposed that the sea-serpent was a zeuglodon, he made an exception for the *Osborne* monster, which 'may have been a manatee'—which is particularly absurd when one remembers its jagged crest and that there are no manatees in the Mediterranean.

The reason, I think, is that this theory is both too bold and not bold enough—too bold for conservative minds who insist that Steller's sea-cow has been extinct for more than a century—and not bold enough for those who would prefer something that had been supposedly extinct for millions of years like the coelacanth or *Neopilina.* I have already mentioned on page 193 that some specimens were seen around Bering Island after it was colonized in 1830. It is more doubtful whether the animal which Professor A. E. Nordenskjöld was told was seen there in 1854 was a sea-cow—a female narwhal is more likely. At all events, when Benedict Dybowski stayed on the island between 1879 and 1885 and Stejneger went there in 1887, they could find no trace of a single one.

But was the sea-cow's range really limited strictly to the Komandorski Islands? This has always been doubted and for good reasons. Steller himself was surprised to learn from the natives when he reached Kamchatka that the animal he had just discovered on those islands was also found on the east coast of the peninsula from Cape Kronotski to Avacha Bay. It must be the same animal, because Kamchadales called it *kapustnik* or 'cabbage-eater', an obvious allusion to the sea-kale which is the sea-cow's usual diet. Nevertheless Steller supposed that on the Kamchatkan coast sea-cows were known only from being washed up. On the other hand he was ready to admit that they might live further north on the Siberian coast, because he had learnt that the Chukchi, who live on the Anadyr Peninsula, usually used the sea-cow's incredibly tough skin to cover their canoes. On the whole Steller believed the sea-cow was more widespread near America and on what he called the islands in the 'channel'. This has usually been taken to mean the Komandorski Islands, but the Russian explorer V. A. Grekov, suggested they might be St Matthew and St Lawrence Islands, further north where the 'channel' is narrower. Moreover F. A. Kulkov noted in his account of a voyage to Attu and Agattu, the nearest of the Aleutians to Asia, in 1759 to 1762, that sea-cows were very rarely seen there. From these and other early reports Grekov showed that in the eighteenth century, at all events, the sea-cow was more widespread than had been thought. And there have been more recent reports.

A Russian told G. Sverdrup that a dead sea-cow was washed up in 1910 at Cape Chaplin at the north of the Gulf of Anadyr. But the Soviet Scientific Institute of Fisheries and Oceanographic Research in the Pacific (or T.I.N.R.O.), never took very seriously the occasional rumours of animals like the sea-cow which they heard from fishermen or coastal people, not only in Kamchatka, but in Chukotka to the north, and the northernmost of the Kurile Islands to the south. But this attitude was seriously shaken by a detailed observation made by the crew of the whaler *Buran* near Cape Navarin to the south of the Gulf of Anadyr in July 1962.

Very early one morning the ship was near the coast when half a dozen unusual-looking animals were seen 80 to 100 yards away. Next morning similar animals were seen again in the same area, where there was a sort of shallow-water lagoon into which a river ran. Sea-kale and seaweed flourished there, and in the winter it was never frozen over except for a narrow strip near the shore.

The witnesses, most of them seasoned hunters and whalers, all agreed that the animals were unlike any known cetacean or pinniped. They were from 20 to 26 feet long, varying no doubt according to age. Their skin was very dark, with a small head clearly separated from the body. The upper lip was divided in a hare-lip and overlapped the lower one (this could in fact have been due to thick moustaches). The tail was remarkable in being edged with a fringe. The beasts swam slowly, occasionally dived for short periods and then rose above water in a very marked way. They formed a compact group, all swimming together in the same direction.

The similarity, especially in the head and the tail, to Steller's sea-cow is most striking, the only other animal that is at all like this is the walrus, but it is never more than 13 feet long. Moreover they were seen in exactly the right biotope.

This event raised the hopes of the Russian naturalists, A. A. Berzin, E. A. Tikhomirov and V. I. Troinin, who reported these facts in *Priroda* (Nature), published by the Academy of Sciences of the U.S.S.R. They also comment very sensibly:

> As we know, the sea-cow was completely exterminated in the Komandorski Islands by fur-seal hunters. However, in other areas, where the sea-cow may have lived, if we are to judge from the data we have cited, there was no hunting of this kind, because there were no animals with valuable fur. We may suppose that the sea-cow could have survived there if adequate ecological conditions coincided, but we have no information on the subject. If this is the case the sea-cow must have been able to remain unnoticed for a long time.

Naturally the Soviet scientists thought the *Buran* report needed confirmation and that a special expedition should be sent to confirm it. Such confirmation should not be difficult to obtain, for the diet of Steller's sea-cow and its inability to dive deep restrict it to a particular biotope of shallow water full of accessible sea-kale and seaweed near a river mouth, since it seems fond of fresh water. They are, moreover, by no means shy, cannot easily escape should they wish to do so; and in a country like Russia where scientific research is strongly supported by the state the question of their existence should be soon established.

There is one possible snag. The sea-cows which seem to be surviving on the mainland may not be the same as those on the Komandorski Islands. They may be better able to escape, less strictly confined to one diet, than those which Steller discovered. All island fauna is liable to degenerate when sheltered from natural enemies, as one sees with the birds of New Zealand and Madagascar which lost their powers of flight. And there is no doubt that the sea-cows on the Komandorski Islands had become so helpless that they were exterminated almost as soon as they were discovered by the most brutal of beasts of prey, man.

It may well be that the species of sea-cow that still survives did not fall into the temptation of too easy an island life, and for that reason have escaped discovery and destruction.

All the same I think it would be rash to argue that the 'monster' seen by Mr and Mrs Timeus north of Vancouver in 1937 was a sea-cow. There are nearly 3,000 miles of ocean between British Columbia and Kamchatka. Nor could it be a local species, because this is the only time that an animal like a sea-cow has been seen around Vancouver Island. The many-humped sea-serpent has never been seen there. The usual type is the cadborosaurus, the maned sea-serpent with large eyes.

Moreover the 50- to 60-foot animal, described by the two fishermen and cited by Mrs Timeus as confirmation, and which is certainly 'Caddy', does not agree with the American couple's description, which gives no more specific size than 'huge'. But as it was only 25 feet away it may have been no more than 23 feet—the size of a female sea-cow. In this case it can easily be identified as the Northern Sea-elephant (*Mirounga angustirostris*), whose proboscis is rather like a longer pig's snout.

To see this native of Mexican and Californian waters off the Canadian coast seems very surprising, but Cowan and Guiguet's book on British Columbian mammals (1956) showed that sea-elephants were sometimes seen around Vancouver Island and that two had been caught. G. Willett reported in 1943 that one had been washed ashore dead even further north on Prince of Wales Island off Alaska.

In 1939 the crew of a halibut fishing-boat reported seeing a sea-serpent raise 10 feet of neck out of the water and stare at them with astonished eyes at Astoria in the mouth of Columbia River. As this is less than 200 miles from his favourite haunts, it seems as if Caddy was on a goodwill visit to the United States.

Then World War II broke out, and no one had any time for sea-serpents of any kind. For the first time since 1817 there was a complete black-out on the sea-serpent for five successive years.

So when, in November 1941, two fishermen from Mooloolabak, north of Brisbane, saw from their boat a serpentine creature which they said was 60 feet long, it was immediately pronounced to be an oarfish. According to Charles Barrett, the naturalist who reported it, they said, 'Its body was marked with red and it had a red beard.' This does, indeed, agree with an oarfish, but these fish are never more than 21 feet long. Nobody suspected the fishermen of exaggeration, though this was certainly the case. And though the maned sea-serpent is often said to be reddish, nobody mentioned the monster's name. It was no longer done to talk about him.

All the same it is clear that some sightings must have taken place during the war—and there was every reason why they should not have been revealed until much later. Not until 1962, when he published his *Monsters of the Deep*, did Thomas Helm tell about what he met in 1943 in St Andrew's Bay off the north-west coast of Florida in the Gulf of Mexico.

After serving four years in the U.S. Marines, Helm was wounded at Pearl Harbor by seventeen bullets from an aircraft's machine-gun, which shot away his kneecap and part of his left hand. He was therefore invalided out, and at the time of our affair he and his wife were announcers at Panama City radio station. They were very keen sailors, and one day in March went out in a little 16-foot yacht along the west coast of Florida. The sea was almost as smooth as a mirror, when suddenly, soon after four in the afternoon, they saw a strange creature making straight for the boat. It had 'a head about the size of a basketball on a neck which reached nearly four feet out of the water'

Helm steered a course to avoid this odd animal, but they still passed it quite close by:

> It was unmistakably some kind of animal. The entire head and neck were covered with wet fur which lay close to the body and glistened in the afternoon sunlight. When it was almost beside our boat the head turned and looked squarely at us. My first thought was that we were seeing some kind of giant otter or seal, but I was immediately impressed by the fact that this was not the face of an otter or seal.

Helm had always been keen on zoology, had trapped otters and mink when he was young and had travelled over the north-west Pacific, so he had learnt to recognize sea-animals.

> The head of this creature, with the exception that there was no evidence of ears, was that of a monstrous cat. The face was fur covered and flat and the eyes were set in the front of the head.
>
> The color of the wet fur was uniformly a rich chocolate brown. The well-defined eyes were round and about the size of a silver dollar and were glistening black. There was evidence of a flattened black nose and just below, where I judged the mouth should be, was a mustache of stiff black hairs with a downward curve on each side.

For an instant the animal stared at the boat, then it turned away as if quite uninterested. Suddenly it swung round, dived and disappeared entirely. Only a big swirl of foam and an eddy of water showed where it had sounded near the boat.

Helm, like other sailors, was interested in the problem of the sea-serpent, but was quite bewildered by the animal's appearance.

> a great dragonlike head with tooth-studded jaws would be much easier to explain away than a catlike head as large as that of a Bengal tiger. [But] what we saw did not in any way conform with reports I had read about unidentified sea creatures.

He cannot have read many, for the animal reminds one of several other descriptions and seems to be a smaller, more round-headed—in other words a young—specimen of the maned merhorse, a sea-foal as it were.

Helm's first thought was that it must be a sort of pinniped, but he rejected this at once, for he believed no known pinniped had so long a neck (which is true), nor so big a head (which is not, for the sea-elephant has); and that there were none in the Gulf of Mexico since the Caribbean Monk Seal, or West Indian Seal, was exterminated nearly 200 years ago (this is far from proved). There were certainly some at the beginning of this century, and there are good reasons to think that there are still some in the Bahamas, off Jamaica and the islands off Yucatan.

But Helm also mentions a feature which seems to have struck many people who have seen maned sea-serpents:

> Seals and sea lions have long pointed noses and the eyes are set on the sides of the head like those of a squirrel or rat. The creature my wife and I saw had eyes which were positioned near the front of the face like those of a cat.

Another sighting made during the war took twenty years to reach us and was only reported in June 1965 as a result of Robert Le Serrec's photograph of an alleged sea-serpent which I shall be dealing with in due course. As a result of the publicity about this, Arthur Féré, a trader at Canala in New Caledonia, was induced to tell how in 1945—he does not remember the exact date—he was fishing from a boat with an outboard motor at about nine in the morning with his wife and a policeman called Montini who had brought his own wife and three children:

> As we were going into Ouengho Bay we all saw a strange shape, sticking up above the water. At first we thought it was a tree with a large branch pointing towards the sky, because it remained quite immobile ...
>
> The presence of this drifting object intrigued us very much, so we made for it. As we approached, we began to see a sort of big head followed by a black neck, marked with yellow. It reminded us of a giraffe.
>
> Following the neck, we could make out a big long shape just below the surface of the sea. We went on approaching. When we were about 200 yards away, it suddenly came to life and dived, raising a big plume of water. Our reaction was to put the helm about and make for land. I must admit we were all very frightened.

In 1945 the newspapers had other fish to fry, more important than any monsters in the sea at Ouengho, and there was no publicity about it. But it seems that the following year the Férés were questioned about it by M. Routier of the Geological Mission of the French Institute of Oceania who brought to Canala for comparison a photo of an identical animal caught in the China Sea. I need hardly say that it would be most interesting if this photograph could be brought to light, for it seems never to have been published.

The war years were certainly a bad time for sea-serpents. Photographs or reports did not find their way into the press. But a few muffled echoes of Caddy were still to be heard. In April 1942 he was seen off Estevan Point. In the same year a Japanese submarine shelled this lonely point, and the superstitious fishermen maintained that they had been aiming at Caddy, having taken him for a secret weapon.

Poor monster! Though the Japs might miss, a Canadian fisherman would not. Or so Ernest Lee, skipper of a motor fishing-boat, boasted when he claimed in the spring of 1943 that he had rammed the monster twice off Vancouver Island, and that Caddy had sunk to rise no more.

This aroused much indignation in Victoria, and it was ironically suggested that Goering should spare one of his medals for the perpetrator of this wicked deed.

The general silence about the sea-serpent during the grim war years was enough to make people think that it was well and truly dead. The disbelievers took this in the metaphorical sense that the world no longer had time for such nonsense, and the ignorant took it literally, assuming that the last specimen had finally been killed.

13

Under a Cloud

(*The Atomic Age, 1946-1966*)

Canst thou draw out leviathan with a hook? or his tongue with a cord which thou lettest down?
JOB, 40, 1

AFTER the war the sea-serpent, which we had left for dead at the end of the last chapter, showed no signs of reviving—at least to the man-in-the-street. The Loch Ness monster had eclipsed its fame, and it was thought to be nothing but an old tale told by superstitious seamen. But in point of fact sightings continued with the same frequency as they had done since 1817; it was just that they received less and less publicity, and the researcher needed more ingenuity and pertinacity to dig them out and check their authenticity.

In 1946 there began to be so many rumours that the cadborosaurus had reappeared in the Gulf of Georgia[1] that A. K. McMartin of Vancouver suggested forming a syndicate to try to catch Caddy and exhibit him in the city's swimming pool as part of the celebrations of the anniversary of the foundation of Vancouver. His idea was to offer a reward to any fisherman who reported seeing the beast, whereupon he would hasten there in an aeroplane, throw a huge net over him and haul him ashore.

Not everyone took this plan seriously, and those who did thought it impracticable, while animal-lovers, remembering the harmless monster's 'warm and kindly eyes' protested indignantly against it. It came to nothing.

So Caddy went on enjoying his freedom and was seen in March 1947 near Siwash Rock during a fishing trip by Peter Pantages, a Greek who ran a restaurant in Vancouver, and a taxi-driver, whose Christian name, Oscar, is all

[1] And sometimes furthur north; though it was certainly not Caddy that Captain House of the the Canadian Government Fishery Patrol saw looking 'like a 30 ft. telephone pole' near Hecate Strait between Queen Charlotte Islands and the mainland.

that has been recorded. Exactly what they saw, and even what they said they saw, will probably never be known, since it was reported by a facetious journalist who made much heavy humour at the expense of Mr Pantages's Greek accent, the fact that as President of the Polar Bears Club he was in the habit of bathing in the sea on New Year's Day and his insistence that he was perfectly sober. This is what the journalist said about the animal they saw: 'It looked like a horse—you know, the kind of horse that resembles an indignant cow or else a wolf, or even maybe a mad dog with accusing eyes and a pompadour. Confusing, h'm?'

Confusing it certainly is, both for the scientist and the man-in-the-street to have to suffer such irresponsible journalism.

George W. Saggers, a fisherman from Ucluelet on Vancouver Island, provides a more acceptable picture of what he saw in November of the same year when salmon fishing, even though his account in *Fate* seems to have been rewritten and sensationalized to suit the taste of that magazine's American readers.

> Suddenly I had the funniest feeling. A sort of shiver went up and down my spine, and I had a feeling that I was being watched. Immediately I looked all around.
>
> On my port side, about 150 feet away, was a head and neck raised about four feet above the water, with two jet black eyes about three inches across and protruding from the head like a couple of buns, staring at me.
>
> It just didn't look real. I've never seen anything like it. The head seemed to be the same size as the neck, about eighteen inches through and of a mottled color of gray and light brown ...
>
> After it looked at me for one full minute, it turned its head straight away from me, showing the back of its head and its neck. It appeared to have some sort of a mane, which seemed like bundles of warts rather than hair. It looked something like a mattress would, if split down the middle allowing rolls of cotton batting to protrude. The color of the mane was dark brown.

Soon after this exciting encounter Henry Schwarz, a timber merchant from Alberni and a keen fisherman, was hauling in his nets near Effingham on the west coast of Vancouver Island, when he saw the remains of a huge animal on the rocky shore, with its tail hanging in the water. It had a head the size of a sheep's attached to a spinal column at least 40 feet long. Two lumbermen, Jim McCullock and Paul Hentel, and George Anderson, skipper of the fishing-boat *Dana*, helped him to take most of the beast in two sections to Alberni, leaving a piece still in the water. These last remains (see Plate 67) were shown to the public at Alberni. For now it really seemed as if Caddy were dead. There was a skull 1 foot 2 inches long by 8½ inches wide, and oddly lacking in teeth, and some 145 cylindrical vertebrae, the largest being 6 inches in diameter, and the smallest, at the end, only 1½ inches.

Two experts went to examine the supposed sea-serpent's carcase, and here

I must leave the *Vancouver Daily Press* to take the responsibility for a story which is even more improbable than the most fantastic of sea-monsters.

> Dr. A. L. Tester and Dr. R. E. Foerster of the Dominion fisheries biological station at Nanaimo examined the skeleton here Sunday.
>
> They were puzzled and took two of the vertebrae back to Nanaimo. There they have a specimen of a ribbon fish, and they plan to dissect it to see if the two heads and other features conform.
>
> Dr. Tester stated that in 1809 a ribbon fish 60 feet long was found in the Orkneys.[1] It was thought at first to be a sea-serpent.
>
> 'We believe, when we have made an examination of the remainder of the carcass which is being brought to Alberni, we will be able to say definitely that it is a huge ribbon fish,' Dr. Foerster said at Nanaimo today.
>
> 'We only saw the bonal structure of the vertebrae column, and the tip of the head.
>
> 'We were able to discern evidence of a long fin, which extends the length of the ribbon fish. One of the discoverers told us that when he first saw the carcass, it was lying on the beach and that a long dorsal fin extended from the head to the tail. This is characteristic of the ribbon fish.
>
> 'The head, too, what we could see of it, resembles the ribbon, but we are making further examination of a small specimen of ribbon fish which we have at the station. Ours is only about seven feet long. It is possible for the fish to grow to much greater length, but never have I seen one 40 or 45 feet in length.'
>
> Dr. Foerster will visit Alberni early this week to examine the rest of the carcass.
>
> There is still a portion of the skeleton below low water mark at Vernon Bay, and the biological men plan to take a boat there this week to try to recover it.
>
> The skeleton, they stated Sunday, is definitely not of the whale family. Some parts are of a type similar to a shark skeleton, but the head is too small and the vertebrae too numerous for it to be a shark.

I need hardly say that these same experts found that it was indeed probably a basking shark, as even a careful look at the none too clear photograph published by the *Vancouver Daily Press* would have shown.

There are, it is true, many biologists so specialized in their interests that they don't know much about animals outside their own laboratories, but how could biologists attached to a fisheries station be so ignorant of fish as not to recognize whether the vertebrae were those of a bony fish like a ribbon-fish or a cartilaginous one like a shark? What need was there to examine the tip of the tail when they had the skull and the spinal column? And why think the skull is the whole head, and that it was 'too small', and the 145 vertebrae too many, for a basking shark (though it normally has between 105 and 115), but not for a ribbon-fish (which always has between 90 and 100)?

Either the newspapers have completely distorted these scientists' opinions, or we must despair of ever trusting to 'experts'. Certainly the lesson of the Stronsa beast had still not been learnt. And this is all the stranger, as the reader may recall, for the same thing had happened in British Columbia, on Henry Island, as recently as 1934, and the director of the same fisheries station had been concerned. But memories seem to be short at Nanaimo.

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[1] This clearly refers to the Stronsa beast found in 1808, not 1809, which was 55 feet long and not 60, and proved to be a shark not a ribbon- or oarfish.

Not until 1950 do we find another report of 'Caddy' which seems sober and authentic. For journalists are more careful in reporting the words of a judge than of a Greek restaurateur, a taxi-driver, salmon-fisherman and even perhaps a biologist. The chief witness is Judge James Thomas Brown, who had been president of the King's Bench of Saskatchewan since 1918. In February 1950 Judge Brown was spending his winter vacation with his wife and daughter at Victoria on Vancouver Island, when, on Sunday the 5th, they were walking along the shore in sunny weather, and Mrs Brown saw a huge animal rise out of the water. At first she thought it was a rock on which the sea was breaking. Then she gave a shout.

> Mrs. Brown saw the monster first. By the time my daughter and I got our eyes sighted on the spot, he had disappeared, but then he came up again about 150 yards from shore. His head, like a snake's came out of the water four or five feet and straight up. Six or seven feet from the head, one of his big coils showed clearly. The coil itself was six or seven feet long, fully a foot thick, perfectly round and dark in colour. There must have been a great length of him under the water. It seemed to look at us for a moment and then dived. It must have been swimming very fast, for when it came up again it was about 300 yards away. You couldn't follow his trail. We watched when he went under, but couldn't spot any ripples.
>
> I got three good looks at him. On one occasion he came up almost right in front of us. There was no question about the serpent—it was quite a sight. I'd think the creature was thirty-five to forty feet long. It was like a monstrous snake. It certainly wasn't any of those sea animals we know, like a porpoise, sea-lion and so on. I've seen them and know what they look like.

We cannot doubt Judge Brown's word, but there is not much useful information to be drawn from an account which describes a sea-serpent as a monstrous snake and yet gives it a vertical coil. The post-war history of the cadborosaurus is typical of such zoological puzzles. The witnesses do not see the beast clearly or report clearly what they have seen, journalists misreport or exaggerate their words, and experts make irrelevant or dogmatic pronouncements without knowing all the facts. And there were some obvious hoaxes, as in Ivan Sanderson's press-cutting about Mr and Mrs C. Charlton seeing a three-headed cadborosaurus off Qualicum in April 1951.

Was the cadborosaurus, the so-called 'saurian' of Cadboro Bay, really confined to the sound between Vancouver Island and the mainland? The same questions arise about all local sea-serpents, those which are frequently seen in the same waters, as about lake monsters: is it a single individual, a pair, a family, a social group living in a limited area, or a whole species confined in a small habitat? And if they are not confined in a lake, we may ask whether they may not be individuals of the same species, briefly visiting the same place, to mate, to give birth to their young, or because it lies on the route of a migration undertaken for climatic, alimentary or sexual reasons. With the cadborosaurus, as with most local sea-serpents, these latter hypotheses must be considered, as we are concerned with a seasonal phenomenon, since some sea-serpents do appear only at certain times of the year.

To return to the first questions: Is 'Caddy' unique, or part of a pair with 'Amy?' Is there a family or a whole group or society of families? I think we can rule out the last alternative, because sea-serpents have never been seen in schools, nor do they seem to be social animals. Two are rarely seen together, and only in two exceptional and rather doubtful cases, three. There are certain conclusions to be drawn from this. Those sea-serpents which are viviparous appear to give birth to a single young one which must leave its mother as soon as it is able to shift for itself. The young of those which are oviparous certainly do not remain together after they are hatched. Sea-serpents moreover, whatever type they belong to, must be monogamous like the whalebone whales, rather than polygamous like the sperm-whales. This does not necessarily mean that they remain paired throughout the year: many animals—leopards, for instance, unlike lions—pair only for the brief mating season. This may be true of some types of sea-serpents, at least, which seem to be essentially solitary in their habit. But, of course, if they are to pair, their territories must be fairly close together at the right time.

The question then arises of the extent of the territory occupied by each individual, pair or family group of three at the most. Does the territory of the cadborosaurus, for instance, consist of the whole of the sound, more than 300 miles long, between Vancouver Island and the mainland, is it confined to certain bays in the sound, or does it stretch much further along the west coast of North America?

Probably the cadborosaurus, singly or in pairs, occupies a very limited territory as most sea-animals do. As they are big beasts with a large body to feed, they must graze on plankton or hunt for fish over a fairly wide area. It all depends on how well provided the area is with food. But it is easy to see that there could be several such territories in a channel more than 300 miles long and averaging thirty miles wide, like the Juan de Fuca Strait joined to the Gulf of Georgia. For there are, if I may say so, certainly several monsters in Loch Ness, which is only twenty-two miles by one and a quarter.

It is in fact essential for sea-serpents' territories to be very close together, indeed touching one another. Large animals never have many young. Mammalian sea-serpents certainly have only one at a time. The young of the others, if they are more than one, apparently do not remain together. If the species is to survive in such conditions individuals of the opposite sexes must be able to meet and sometimes to make a choice, and must therefore live relatively close together.

If there are several cadborosaurus territories between Vancouver Island and the mainland, are they all confined to these waters? The fact that a sea-serpent has been seen by halibut fishermen nearly 200 miles further south in the mouth of the Columbia River, seems to show they are not.

So far only a few rare sea-serpents have been reported in the north-east Pacific off British Columbia in the north and in the Gulf of California in the south. In two such distant places they would clearly belong to two different species, but we shall find a number of sightings which will help us to fill in some of the gap between these territories and even to extend them northwards. It will also gradually appear that the territory of one type of sea-serpent, the maned it would seem, probably stretches all along the west coast of North America—at least in the temperate zone.

In fact there is no justification for using a term like cadborosaurus except for convenience in locating sea-serpents geographically. It could also be justified if all the sea-serpents on the west coast of North America proved to belong to a particular species, which could be given this name, incorrect though it is. But as there is much local pride in such matters this would cause offence, for why should Caddy take precedence over Bobo of Cape San Martin, the 'Old Man' of Monterey and the San Clemente monster, especially as the last of these has chronological priority? Let us have a look at these Californian monsters.

On 7 November 1946 a sea-monster appeared off Cape San Martin. One witness, perhaps more imaginative than the others, said that it had a gorilla's face—which was at least original. After making inquiries locally the United Press found that the animal had appeared regularly for ten years and was well known in the neighbourhood as 'Bobo'

When Ivan Sanderson wrote his article 'Don't Scoff at Sea Monsters' in the *Saturday Evening Post* a reader called Jim Martin wrote to the magazine that:

> sea monsters have been sighted frequently in Monterey Bay, California, during the past twenty years. So common has the occurrence become that fishermen no longer mention it with tongue in cheek, and many are the tales of encounters with the 'Old Man of Monterey Bay' as it is called locally ... Length of the creature is estimated from 45 to 70 feet.

But the Californian sea-serpent about which we have most information is the San Clemente monster, so called because it is usually seen between that island and Santa Catalina some fifty miles south of Los Angeles. Its sponsors include some of the biggest names in big-game fishing. It seems to have first made itself known between 1914 and 1919, for it was then that news of it came to the ears of Ralph Bandini, secretary of the Tuna Club, the first of all the American big-game fishing clubs. Bandini was in the area to fish for tunny and swordfish, and felt it his duty to inquire about the beast so many people talked about. His own crew, Percy Neal, had seen it, but Bandini got nothing out of him but a mumble about 'eyes as big as plates'.

Fortunately he saw the monster himself soon afterwards as he was fishing for tunny ten miles off Catalina in the San Clemente channel. Percy Neal shouted: 'Look, look! Over there!' About a mile away something huge and shining rose higher and higher out of the water. Bandini was convinced by what he saw, but it was not until 1920 that he was able to watch it from fairly close. One September morning he had gone out in his power cruiser with his friend Smith Warren, a well-known figure in Southern California, to fish for marlin. At about eight in the morning they were about a mile west of their camp at Mosquito Harbor when the event occurred which Bandini described thus in his book *Tight Lines* in 1932:

> All of a sudden I saw something dark and big heave up. I seized my glasses. What I saw brought me up straight!
>
> A great columnar neck and head, I guess that is what it was, lifting a good 10 feet. It must have been five or six feet thick. Something that appeared to be a kind of mane of coarse hair, almost like a fine seaweed, hung dankly. But the eyes —those were what held me! Huge, seemingly bulging, round—at least a foot in diameter!
>
> We swung toward it ... Then, even as I watched through the glasses, the Thing sank. There was no swirl, no fuss ... Just a leisurely, majestic sinking—and it disappeared, about a quarter of a mile away.

Clearly there was only a small part of the animal above the waves; yet Bandini thought its total mass must be greater than that of the biggest whale. For, though there was a slight swell, the monster did not rise with the waves as a whale would have done· it remained motionless, and the waves broke upon it as upon a rock.

Bandini saw the monster twice more in the same waters, but never so close. What seems to have struck him most were the huge eyes, as big as plates, and moreover dull and indifferent as those of a corpse or a dying man, quite terrifying. This is very different from Caddy's 'warm and gentle' eyes, but the adjectives applied to eyes seem to depend more upon those of the observer than the observed.

George Farnsworth, the chief Californian sport-fishing boat-owner, described the San Clemente monster in *The History of the Tuna Club*—of which he was president:

> Its eyes were 12 inches in diameter, not set on the side like an ordinary fish, but more central. It had a big mane of hair about two feet long. We were within a hundred feet of it before it went down. This was no sea elephant. It was some kind of mammal, for it could not have been standing so long unless it was.

Another ex-president of the club, the millionaire George C. Thomas III, gave a similar description of the monster, and so did many other reputable witnesses: Jimmy Jump, another ex-president of the Tuna Club and holder of many fishing records, and Joe Coxe, maker of the famous Coxe reel and expert on deep-sea fishing. J. Charles Davis II, author of many technical fishing books, said of the account he collected from various witnesses:

> It was almost as though a recording had been made and each man played the same record.
>
> Now please bear in mind, because I think this is important, that these men were all interviewed separately AND NONE OF THEM KNEW THAT I HAD TALKED TO ANYONE ELSE ABOUT THE SAN CLEMENTE MONSTER!

Each of them had seen it in the same waters: the Outer Santa Barbara channel between San Clemente and Santa Catalina islands; and each of them had described it in the same way: a neck like a column, big eyes like plates, a mane like a bunch of seaweed, the obvious size of the body which was never visible, but which did not move with the waves.

After the Second World War the monster suddenly ceased to be heard of, and for much longer than Caddy. But in December 1950 Miss Opal Lambert, who was working in the post office at the little resort of Summerland, saw it again in Californian waters: 'I was stamping Christmas cards when I looked up and saw it swimming in circles about 200 yards off shore.' She told the police that the monster's head stood 4 feet above the water and that it disappeared after ten minutes.

Then on a sweltering summer's day, 8 June 1953, the San Clemente monster appeared beside a fishing-boat in the usual channel. This time it was seen, not by record-seeking sportsmen after the thrill of big-game fishing, but by a professional fisherman, Sam Randazzo, and his crew of eight. They were so surprised that they immediately reported it to the Coastguards. Their description agrees exactly with those of the earlier witnesses and provides striking confirmation of their good faith:

> We saw the Thing, estimated that it had a neck 10 feet long and between five and six feet thick. Its eyes were cone shaped, protruding, and about a foot in diameter.

The professional fishermen are hardly likely to have invented this tale to oblige their rivals the amateurs.

Unfortunately we cannot be so confident about the next two reports, which we owe to the American magazine, *Fate*. In October 1954, Barney Armstrong, skipper of the *Sea-Fern*, saw not far away, off Newport Beach jetty, a 'sickly green' 20-ton monster.

> 'We were coming in at about 4.30 P.M. when I spotted the thing sticking up out of the water about four feet,' he said. He throttled down and circled it. The head was round, thorny, and seemed to have a kind of horn, like a cornucopia, hanging. Its mouth was two feet across.

Orrel Reed, Jr., the passenger on board, thought the animal had two eyes, but Armstrong said there was only one.

If this were really the San Clemente monster the afflictions on its head might almost explain its colour.

Hardly less strange is the animal that Phil Parker, an aircraft worker, and Grant King, an architect, saw soon afterwards a mile off La Jolla, when they were fishing from a boat. They watched from only 50 feet away for about 25 minutes and said it had a head and shoulders like a bull gorilla and no face. 'It wasn't a whale and it wasn't a sea lion,' Parker said. 'And it sure didn't look like a snake.'

Dr Carl L. Hubbs, professor of marine biology at the Scripps Institution of Oceanography, could not explain it, and all we can say is that if this faceless gorilla were given Bobo's gorilla's face it would at least make a coherent sea-gorilla, but it would have little in common with any other sea-serpents seen in these waters.

We now leave sunny California for the icy shores of Alaska where there are also reports of monsters very like our cadborosaurus. Towards the end of April 1947 Mr and Mrs Lou Baggon saw a sea-serpent in Security Bay from the deck of the tug *Suntrana* operated by the Juneau Lumber Company. Mr Baggon saw it first and pointed it out to his wife. They both reported that 'it had a flat, goggle-eyed head and was looping along through the water', in other words it was undulating vertically with 'loops' above the surface.

A fortnight later, on 8 May, Lauri Carlson and L. Panama were rowing round the north point of Pennock Island when they saw ripples on the water near their boat for no apparent reason. Then, only about 25 feet away, a head like a cow's, but somewhat smaller, rose out of the water on a curved neck 8 inches long. As it raised its head it stared at the men, then looked about it and dived, showing a row of fins on its back which recall Caddy's jagged crest. They could get no idea of its length.

These last two sightings occurred off the south-east coast of Alaska, that is to say the coastal strip that overlaps Canadian territory and takes a bite out of British Columbia. This seems to imply that the habitat of the cadborosaurus (known also by other names) reaches at least from Juneau to

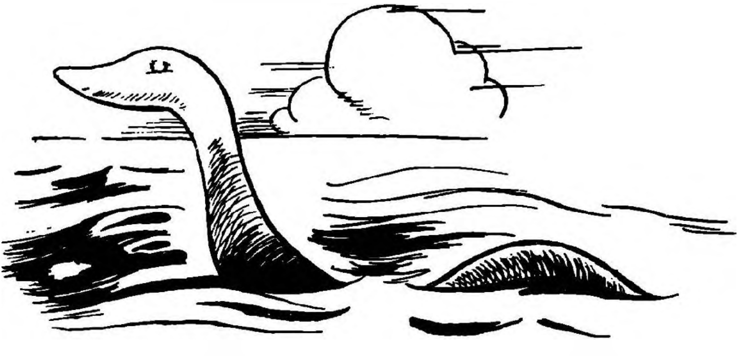
Los Angeles. To take it further south into the Gulf of California would mean including the animal seen by Lieutenant Hope of H.M.S. *Fly* around 1840, and this would be rather difficult. It will be useful when we come to try to classify the different types of sea-serpent and to define the areas of distribution, to know that the same type has often been encountered along the west coast of North America, between the 32nd and 58th parallels, that is to say in the temperate zone.

We can say much the same thing about the many-humped Massachusetts (or more aptly New England) sea-serpent, which is actually regularly met all along the east coast of America between the 35th and 50th parallels—also in the temperate zone.

It is clearly this old friend which was seen on 4 September 1947 off Lynn Beach, Boston, by a Medford piano-tuner called John Ruhl and his daughter. He said that it must have been 50 feet long and that the back showed every 6 feet. He swore it was not a whale.

This sea-serpent had hardly reappeared before its death was reported, at the very end of the same year. The story, which appeared in the world's press, began with a wireless message which the U.S. Hydrographic Department received on 30 December from the Grace Liner *Santa Clara* sailing from New York to Cartagena in Colombia.

> LAT 34.34 N LONG 74.07 W 1700 GCT STRUCK MARINE MONSTER EITHER KILLING OR BADLY WOUNDING IT PERIOD ESTIMATED LENGTH 45 FEET WITH EEL LIKE HEAD AND BODY APPROXIMATELY THREE FEET IN DIAMETER PERIOD LAST SEEN THRASHING IN LARGE AREA OF BLOODY WATER AND FOAM SIGHTED BY WM. HUMPHREYS CHIEF OFFICER AND JOHN AXELSON THIRD OFFICER.



116. The *Santa Clara* sea-serpent, 1947, after the witnesses' descriptions

The press would, no doubt, have treated this as facetiously as usual, had not the captain, John Fordan, written a detailed communiqué on the subject, which was put out by Associated Press.

On 30 December the *Santa Clara* was sailing on a glassy sea in sunny weather off North Carolina. She was 118 miles east of Cape Lookout, and the chief mate, William Humphreys, the navigation officer, John Rigney, and the third officer, John Axelson, had gathered on the bridge and were about to take a noon sight.

> Suddenly John Axelson saw a snakelike head rear out of the sea about 30 feet off the starboard bow of the vessel. His exclamation of amazement directed the attention of the other two mates to the Sea Monster, and the three watched it unbelievingly as in a moment's time it came abeam of the bridge where they stood, and was then left astern. The creature's head appeared to be about 2½′ across, 2′ thick and 5′ long. The cylindrically shaped body was about 3′ thick, and the neck about 1½′ in diameter. As the monster came abeam of the bridge it was observed that the water around it, over an area of 30 or 40 feet square, was stained red. The visible part of the body was about 35′ long. It was assumed that the color of the water was due to the creature's blood and that the stem of the ship had cut the monster in two, but as there was no observer on the other side of the vessel there was no way of estimating what length of body might have been left on that side.
>
> From the time the monster was first sighted until it disappeared in the distance astern it was thrashing about as though in agony. The Monster's skin was dark brown, slick and smooth. There were no fins, hair or protuberances on the head, neck, or visible parts of the body.

When the *Santa Clara* returned to New York in mid-January journalists interviewed the witnesses, but got little further information. They saw the ship's log in which the encounter was noted in red ink, as was usual for remarkable events or accidents. And as there was a fine of $500 for making a false entry, it is inconceivable that the whole thing was a hoax. They must have seen something. But everyone knew that there was not such a thing as a sea-serpent. So what did the experts say?

Christopher Coates of the Aquarium of the New York Zoological Society told a journalist that the creature that had been run over was an oarfish:

> Often two people seeing the same thing will describe it differently afterwards. The seamen said the body was round, but a flat surface may look round from a distance. An oarfish is what we call a compressed fish—narrow from side to side but wide from top to bottom.
>
> It's possible what they saw was a large porpoise, but more likely it was an oarfish.

But in this case the witnesses did *not* describe it differently, they all concurred. And if Mr Coates has in his aquarium a porpoise with an eel-like head and a thin neck or a dark brown oarfish 35 feet long with no fins or protuberances on its head, he should tell the world and put up his admission fee—for he would have a sea-serpent in captivity.

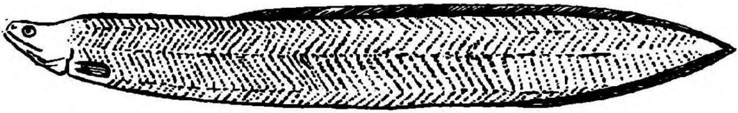
He was not so fortunate as that. Yet soon afterwards it was learned that there had been one for nearly twenty years in a jar in the collection of the Charlottenlund Marine Biological Laboratory in the outskirts of Copenhagen. This is no joke. *Since 1930 we have had the tangible indubitable proof of the existence of at least one type of sea-serpent in the form of a specimen preserved in alcohol.*

A few zoological specialists knew about it, but it was not revealed to the public until 1949, when the press announced the preparations for the Danish oceanographic expedition of the *Galathea.* This ambitious expedition had been planned for fifteen years and was financed by the Danish government. It intended to explore the almost unknown depths below 2,000 fathoms—and two-thirds of the surface of the globe are covered with waters of more than this depth. The *Galathea* was an old 100-foot coastguard vessel and was to carry a scientific team of ten men, led by one of the most eminent oceanographers and marine biologists, Dr Anton F. Bruun (see Plate 68), Director of the University Zoological Museum of Copenhagen and a disciple of the celebrated Johannes Schmidt, who discovered that all the eels in Europe and North America are born in the Sargasso Sea whence they return to breed after fantastic migrations.

Dr Bruun spoke to the press as boldly as any Viking:

> I belong to that group of scientists who don't discard that 'myth' about sea-serpents. It's quite possible they exist in the depths of the ocean that no one has ever explored. After all no one has ever fished for them. Maybe we will catch one.

Dr Bruun had the best of reasons for his optimism. In 1930, when he had been a young assistant to Schmidt, he took part in the professor's oceanographic expedition on the *Dana.* On 31 January in latitude 35° 42′ S., longitude 18° 37′ E., west of the Agulhas Bank between the Cape of Good Hope and St Helena, the net brought up from about 150 fathoms an eel larva 6 feet long!



117. Giant leptocephalus trawled up by the *Dana* in 1930

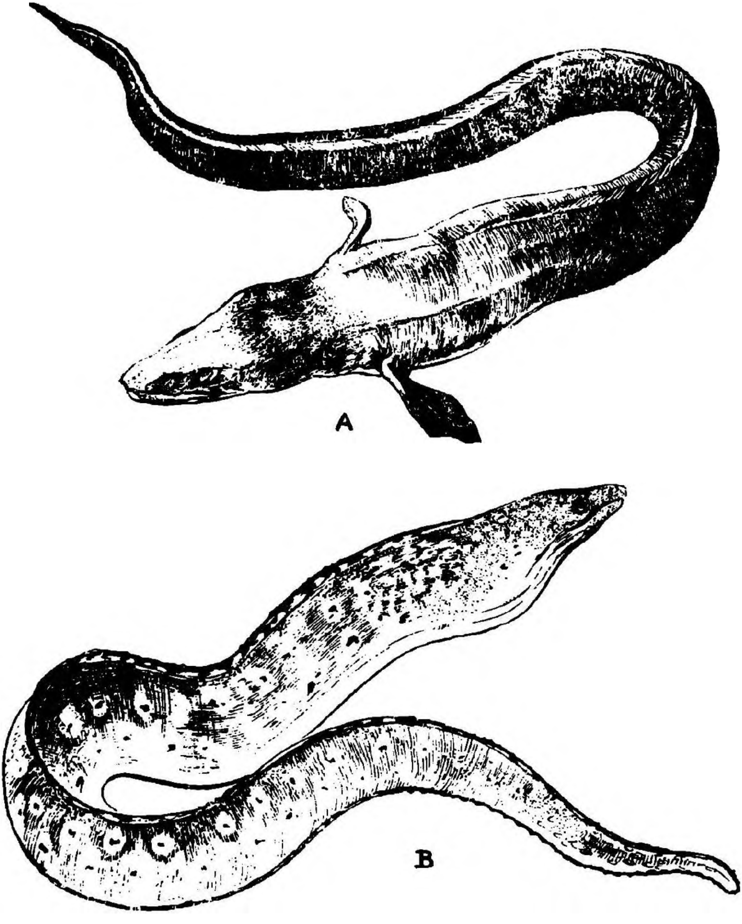
The eels, like the batrachians, are animals which undergo metamorphoses. Just as a frog goes through a stage as a tadpole quite unlike its adult form, all eels, before they turn into the creatures we know, spend part of their lives as small laterally flattened sea-fishes as transparent as glass and almost invisible: in the water they seem to consist only of two black dots which are their eyes. Their larva is called a leptocephalus or 'narrow-head'. This special name arose in 1788 when Gmelin, Linnaeus's successor, named an unknown little fish of this kind discovered by William Morris near Holyhead in 1763 *Leptocephalus morrisii*. Then Dr H. Kaup caught another similar fish, but clearly of a different species, which he christened *Leptocephalus brevirostris* in 1856. But not until the end of the last century did the Italian ichthyologists Grassi and Calandruccio happen to notice that it was merely a larval stage of the common eel; and then the French biologist Yves Delage proved Morris's leptocephalus was really a conger larva.

Each species of eel has a corresponding leptocephalus of a particular shape and size. The leptocephalus of the common eel is no more than 2¾ to 3 inches long before it turns into an adult, which may grow to 4 feet 6 inches —eighteen times as long. The index of growth is even higher in the conger, whose larva, Morris's leptocephalus, is 4 inches long, and the adult of which, the female at least, may reach 10 feet—thirty times as long.

Young Anton Bruun therefore concluded, after his miraculous catch of a leptocephalus as big as a large man, that the adult ought logically, if the proportions were the same, to be 108 to 180 feet long. As the index of growth might be less than that of an eel or a conger, Bruun reckoned that, being very conservative, he could safely say there must be eels at least 50 feet long in their adult state.

If such an eel appeared on the surface would it not make a very acceptable sea-serpent? After all the monster had more than once been compared to a gigantic eel. As long ago as 1819 Rafinesque had suggested that some sea-serpents seemed to be related to *Synbranchus*, which, though not strictly speaking an eel, looks very much like one. Charles Gould in *Mythical Monsters* collected several reports of congers more than 20 feet long off Singapore. And A. Hyatt Verrill tells us that his father, Professor Addison E. Verrill, who was responsible for the first complete description of the giant squid, believed in two types of sea-serpents, one like a plesiosaur, the other related to the congers.

There is no doubt that many of the features in the descriptions of some sea-serpents are very like those of gigantic congers: the blunt head on the end of a serpentine body with no narrowing at the neck, the dark colour on the top of the body and whiter underside, the very long crest or dorsal fin, the pectoral fins shaped like paddles which are not seen when held close to the body, the long tail tapering to a point (Fig. 118A overleaf).



118. Eels: A. conger; B. moray

All this must have struck young Bruun, but the most uncanny thing of all was that the giant leptocephalus was fished up exactly where the most famous of all sea-serpents was seen by the crew of the *Daedalus* in 1848, and one, he thought, which was very like a big eel. With this still in mind Dr Bruun wrote in 1959:

> I have read most of the accounts of early voyages of discovery, and I have been struck by the fact that many sightings of so-called sea-serpents were made in the same general area of the South Atlantic where we found our great leptocephalus.

It is true that since the beginning of the last century some twenty sightings have been made in the South Atlantic, half of them near the Cape. But these are few compared to the hundreds elsewhere. Surely it is an unwarranted generalization of Dr Bruun's to claim that off the west coast of Africa is the likeliest place to catch a sea-serpent. The other place which he considered the most favourable was the strip of ocean along the west coast of South America, where, so far as I know, *no sea-serpent of any kind has ever been reported.* Why did he choose these two areas? Because, he said, these waters were the richest in the world in nutritious salts, and thus the best stocked and the zone where fishermen caught the biggest fish. A sea-serpent, he thought, would need an especially rich hunting-ground.[1]

This argument is all the less convincing in that Dr Bruun thinks the sea-serpent is really an eel 30, or at most 65, feet long, that is between 3 and 25 tons in weight. Animals of this size, and even much bigger, like the great whales, whale-sharks, giant rays and giant squids are never confined to these waters. If Dr Bruun's argument were applied to land animals, we should expect to have the best chances of catching an elephant or rhinoceros in the green meadows of Wiltshire or Minnesota. All the same we must admit that some types of sea-serpents would be able to feed particularly easily in these zones of the ocean. Dr Bruun also explains why he thinks sea-serpents are generally so rarely seen:

> There are small sea eels, about the size of the fresh-water ones, that breed in the sunlit layers of the ocean in sub-tropical and tropical regions but head for the cold depths as soon as they are grown. We have found them as far as two miles below the surface, living where the temperature is almost constantly around 38 degrees above zero.
>
> I believe that giant eels, grown from larvae such as the one we found off south-west Africa, may very well live in those dark, frigid regions. Since they would spawn around 200 feet below the surface, and die afterwards, as all eels do, their great bodies would normally sink to the ocean bottom without ever being seen.

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[1] Dr Bruun uses this argument to deny the existence of the Loch Ness monster, for he thinks the loch much too small and lacking in food to support a large animal. Yet trout, salmon and pike abound there as well as particularly big eels.

> But it is conceivable that occasionally one of them, in a bewildered, dying condition, might struggle to the surface after spawning. As it rose, its need for more oxygen would far exceed its capacity to absorb it, and it would find surface temperatures intolerably hot. It would literally suffocate as it reached the air.

And it is these spectacular death-throes which are sometimes seen.

Dr Bruun's theory is well calculated to satisfy the most sceptical and conservative zoologist, and for three good reasons:

1. A bottled baby sea-serpent provides a complete guarantee of its existence; it is the piece of concrete evidence so desirable for any new zoological description.

2. The suggested prototype does not belong to a group thought to be extinct for millions of years, but to a family of animals with many living representatives: its discovery would not upset any of our present palaeontological knowledge.

3. The animal in question fortunately lives in the depths which are only beginning to be explored: this explains why it has so far escaped discovery.

Thus there was nothing to upset a conservative point of view. But Dr Bruun's theory is subject to some criticisms all the same.

He thinks that the accidental nature of the great sea-serpent's appearances is responsible for their extreme rarity. There are two objections to this. Firstly the great sea-serpent appears much less rarely than many other sea-animals which are officially recognized: one would have a hard time collecting a hundred reports of sightings at sea of the giant squid, the whale-shark and most of the beaked whales. Secondly, while some witnesses have described the sea-serpent writhing on the surface in throes of agony, this is quite exceptional. On the contrary most have insisted that the monster moved easily, peacefully, gracefully and even majestically, as it basked at the surface or watched them with curiosity. Those who have described the speed with which sea-serpents were seen to move, have stressed their straight and even course or the quickness with which they kept diving. These are hardly features of a dying animal.

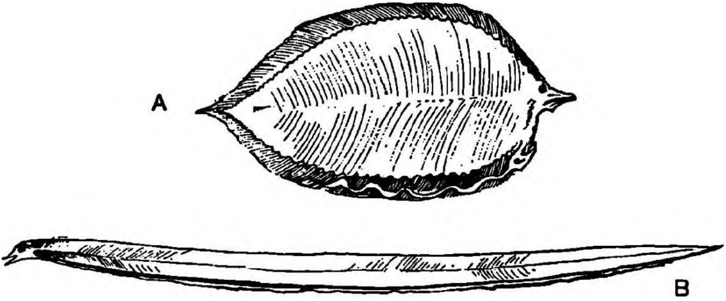
While there is no doubt that giant eels are responsible for *some* sightings of sea-serpents, it is no less clear that one cannot hope to explain *all* of them by vast abyssal eels dying on the surface.

In any case do giant eels necessarily dwell at great depths? It is probable, but there is no proof. There have been attempts to make the coelacanth a fish of the great depths in order to excuse our failure to discover it earlier, but everything seems to show that it is not. It is for psychological reasons rather than zoological ones that man insists on trying to put the sea-serpent and other 'monsters of the deep' in the abyss.

Finally are giant eels really as big as all that? The late Léon Bertin, professor of ichthyology at the Paris Natural History Museum (Plate 69) asked:

> Can one conclude from the fact that the European eel, which may reach at the very maximum a length of 4 feet 6 inches, grows from a leptocephalus 3 inches long, that proportionately a larva 6 feet long must grow to 100 feet when adult? To apply a simple rule of three in calculating size is absolutely absurd when we compare one species with another.

The shape of the giant leptocephalus may give us a useful idea of the relevant index of growth. In fact leptocephalic larvae vary enormously in shape according to the species. That of the common eel is shaped like an olive leaf, the conger's and the moray's are like a fairly short ribbon. Indeed there are all the intermediate shapes between the leptocephalus of the genus *Cyema*, which is almost like a big disc, and that of *Nemichthys*, which is like a narrow ribbon.



119. Two extreme forms of leptocephalus: elliptical in *Cyema*, ribbon-like in *Nemichthys*

In view of the more or less ribbon-shape of giant leptocephali like the *Dana*'s, Professor Bertin states that:

> It must be agreed that they certainly have nothing in common with the usual fishes of the eel kind such as the eel, the conger, the moray, the serrivomer, and so on. On the other hand they are very like *Nemichthys* and allied forms. Now the largest known larvae in this group are 15 inches long and the largest known adult is a little over 3 feet. The proportion is about 1 to 3 and not 1 to 18 as in the eel. If the two giant leptocephali that have been caught belong to the *Nemichthys* group it is therefore very likely that the adult is no more than 16 to 20 feet long and not 100 feet as has been suggested.

The great French expert on the eels goes even further:

> The fact that the leptocephalus is separated from the adult by a metamorphosis also leads to great uncertainty about the proportion between their sizes. We should recall what happens with the anourous batrachians in which the tadpole is

> very often much bigger than the adult: the tadpole of *Pelobates fuscus*, which is 7 inches long, metamorphosing into an adult 2¼ inches long. In other words the size of larva does not enable any conclusion to be drawn about that of the adult. There is no proof that the 6-foot leptocephali are necessarily the young of eel-like fishes of very large size.

But although Professor Bertin is bent on destroying the only concrete evidence we have of a sea-serpent's existence, it is not because he disbelieves in it. On the contrary he is quite categoric: 'The monster exists. But it is quite another matter to know what it is.'

Professor Bertin thinks that,

> the theory of 'the eel-like fish sea-serpent' does not agree with three of the features which those who have had the good fortune to see the animal regularly speak of: the four legs shaped like fins, the vertical undulations of the body, the jets of vapour blown out by the nostrils.

Here he falls into the common error of thinking that all sightings of sea-serpents concern one species only. It is very clear that those sea-monsters which were seen to have four feet and those which blew out jets of vapour could not be giant eels. But this is not true of those which were seen to undulate vertically. At least this is the remarkable conclusion which Dr Maurice Burton (Plate 70) came to in the 1950s.

At that time Dr Burton had been interested in the sea-serpent for some thirty years and had come to the conclusion that it and the Loch Ness monster were both giant eels.[1]

> They are the only known animals equally at home in salt or brackish water—or even fresh water in some cases—that are sufficiently amphibious to be able to keep the head out of water for the length of time required by the various reports, and which habitually lurk at the bottom, making only infrequent and sporadic appearances at the surface.

He mentions the capture of giant leptocephali and goes on:

> Size, then, is no obstacle to the acceptance of these persistent stories, nor speed, as anyone will know who has watched a conger swim. Only the humps remain, the sole obstacle to acceptance.

As eels can only undulate horizontally they cannot look like a string of buoys when swimming normally. But, wondered Burton ingeniously, supposing they swam on their sides? If they were to do so at the surface the problem of the humps would be solved. He set about questioning all the anglers he knew, but without success. Nobody ever remembered having seen an eel behave so oddly, nor even swim on the surface. But soon afterwards, when he was repeatedly watching the film *Round the Reef*, for which he was providing the commentary, Burton had a shock. It was only after he had seen it several times that he realized that a conger swimming very fast over a bed of coral was doing so on its side. Undulating in the vertical plane like this, its body was able to follow the ups and downs of the coral very closely. Admittedly it never made more than two convex curves—humps if you like—but the rapid undulation of the fin along its body made it look as if a large series of bumps were running from one end of the body to the other (Plates 72, 73, 74).

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[1] He was later to change his mind, at least as regards the Loch Ness monster.

At all events it was established that eels could swim on their sides. But was this their habitual behaviour, and could they do so on the surface? To find out, Dr Burton posted himself in front of the conger's tank in the Aquarium at the London Zoo. To watch animals in the hopes of seeing them do something particular needs infinite patience, as zoologists—to say nothing of animal artists and photographers—know only too well. For the first half-hour nothing much happened, but in the second some very strange events occurred.

> One of the smaller eels, 2½ ft. long, rose from the bottom of the tank and gently tilted its body until it was suspended in mid-water head down. Then it glided to the surface until 9 in. of its tail protruded vertically above the water, in which position it swam gently along. A larger eel doing this, with 6 ft. of its tail erect above the surface of the sea, would produce an appearance difficult to interpret, or to have believed.
>
> Several such things occurred, but the most important thing was still to come. As I was about to turn away, a 5 ft. conger, hitherto quiescent in a drain-pipe lying at the bottom of the tank, emerged and swam slowly and effortlessly around at about mid-water for about ten minutes. Then it suddenly rose to the surface, turned on its side, and undulated its body violently, causing a flurry of water and a series of humps above the water-line. Then it slowly sank to the bottom into the drain-pipe and settled down once more at rest. Meanwhile, the surface of the water, left in violent agitation, slowly subsided. A really large eel carrying out such a manoeuvre would give a picture of the sea-serpent.

In this war of the three Bs (Bruun, Bertin and Burton) the victory certainly goes to the theory that a giant eel is the origin of some sightings of the sea-serpent. The first round went to Bruun when he revealed the discovery of the giant leptocephalus. The second went to Bertin when he showed that a giant larva did not necessarily mean a giant adult. And coming to Bruun's aid Burton showed that his theory was legitimate after all. But Bruun knew that he would not really have won until he brought back a specimen of his super-eel from his oceanographic expedition.

In October 1950 the *Galathea* left Plymouth to cruise for nineteen months and 60,000 miles. Before she left, all we knew of fauna below 3,000 fathoms consisted of a few sponges and a few holothurians brought up from 3,500 fathoms. Some even doubted whether there could be any more life at greater depths where the pressure was so terrific. All that had been brought up from 4,500 fathoms was a little clay and a sample of water.

In June 1952 Copenhagen's little mermaid saw the *Galathea* return in triumph after having explored the greatest depths of the ocean, including the famous Mindanao trench off the Philippines, 5,650 fathoms deep. The expedition had conclusively proved that there was life to the very bottom of the abyss. The first time the dragnet went down below 4,500 fathoms it brought up anemones, holothurians, a sort of sand-flea (an amphipod crustacean), and several species of bivalve molluscs, representatives, in fact, of four distinct zoological branches. A brotulid fish (*Bassogigas*) was even brought up from nearly 3,500 fathoms in the Java trench. All in all Dr Bruun and his colleagues brought back 140 species of animals from depths of more than 3,000 fathoms. One of them, Dr Henning Lemche—it was learnt in 1957—had found off the Pacific coast of Costa Rica ten specimens of a little mollusc, *Neopilina*, no bigger than a sixpence, which belonged to a group thought to have been extinct for 200 million years longer than the plesiosaurs. But there was no adult specimen of the sea-serpent.

The bleeding casualty of the collision with the *Santa Clara* was by no means the last of the sea-serpents. From 1947 onwards, in spite of being in such general disrepute, the sea monster was heard of every year.

In 1947 it was much in the news in Natal. At the end of April an inhabitant of Merebank claimed to have seen a sea-serpent more than 60 feet long near Tiger Rocks on the south coast. At first he took it for a reef of rocks, but he realized his mistake when it undulated away. This was confirmed by some bathers who saw 'a flurry in the water and a black object about a mile from the shore'. Around the end of August or the beginning of September of that year two Durban harbour-pilots and the crew of the pilot-tug *Harry Cheadle* reported they had seen at sea a huge creature 'with projecting eyes, a great mouth, long teeth and with a bark'. It was 30 feet long, and not a whale, but more like a hippo. One pilot said:

> The body was bare, was barrel-shaped and tapered away to the tail, which had two huge fins. As the creature's head came clear of the water, it barked at us. It was definitely a bark and nothing will convince me that any whale could make such a sound.

Then some trippers on the pleasure-cruiser *Panther* said that a gigantic beast like a dragon with a huge tongue had risen out of the water two miles from their ship. But they must be pulling our legs, for even the hugest tongue could hardly be seen from two miles.

In the first week of September Mr J. Kennedy of Iispingo said that on a

Friday night, when walking along the beach, he suddenly saw rising from the breakers a monster that 'brayed like a hundred donkeys' and had eyes that shone 'like red searchlights'.

These reports are particularly interesting, because it is rare for witnesses to mention the sea-serpent's cry. Yet it would be strange indeed if those that are clearly mammals were quite mute, whether they are related to the cetaceans or the pinnipeds, both of which make a noise.

After 1947, the sea-serpent besides being reported from the familiar waters of Great Britain, Canada, South Africa and Australia, was even seen in such unusual places as the Mediterranean and the Korea Strait as well as quite new ones such as off Kenya and in Rio Bay. The affair—like so many other affairs—has now become quite international, and we can no longer conveniently think in terms of periods connected with particular countries. Rather than always deal with these last sightings strictly according to geography or chronology I shall sometimes arrange them in a more valid sequence.

Here are two reports from quite unusual areas. The first comes from the coast of Kenya. Never before has a sea-serpent been seen off the East African coast between Cape Guardafui in the north and Natal in the south. This should perhaps make us rather wary of it.

From December 1948 to February 1949 a mysterious creature, soon to be known as the Kilindini monster, was seen in the strait between the mainland and the island of Mombasa. The natives had talked of it for generations, but not until two R.A.F. corporals claimed to have seen it that Christmas did it find its way into the press, although their description was very bizarre. Corporal J. Somerville said:

> It has a large flat grey head covered with scales, with what appeared to be horns sloping from its head. I saw a small portion of its back, which was about six feet in breadth.

A week later at least sixteen Europeans claimed to have seen it too. Two members of a ship's crew saw it exactly where the airmen had done so. At night 'on the edge of the ship's lights', F. Connell, a carpenter from Chorley, Lancashire, saw a huge head rise out of the water and movements which made 'a tremendous swell'. And the third engineer, Leslie German, heard a splash and ran to the rail just in time to see 'a large indefinable mass' disappear beneath the waves.

K. A. Streets said that he had also seen the animal shortly before Christmas. 40 yards away from him the monster's back appeared five or six times. The back seemed to be 5 feet wide. 'I have never seen anything to compare with it,' he said. 'Although the creature was swimming with an undulating motion, I don't think it is a serpent.' E. C. A. Hynes, a hotel proprietor, saw it on 9 February. But the sceptics said that it must be a strayed hippopotamus, and I have been able to confirm that hippopotami do sometimes put to sea to migrate to other places along the same coast. But the witnesses, who knew these animals well, were positive it could not be one. An amateur photographer in the crew of the *Clan MacBrayne* watched for four days in the hope of photographing it, but without success.

At the end of February four bathers at Likoni saw the beast, which they first took for a huge buoy 50 yards offshore. But it made off at top speed against the current, covering 500 yards in less than a minute. They described it as, 'the colour of beer with a broad back rising 2½ feet from the water and three feet across'.

A Likoni resident said he had already seen the Kilindini monster four times. But the press grew bored with it, and it sank back into obscurity.

Much vaguer and much harder to check, is the following story, which consists of a dispatch from Tokyo put out by the Agence France-Presse on 11 March 1952:

> A sea-serpent 50 feet long and 3 feet thick is at present being hunted by Korean zoologists. This monster is said to live on Pepson Island, 15 miles off Pusan, where it is believed to have eaten an 18-year-old girl last year. Korean scientists are perparing special electrical instruments with which they hope to catch it.

It is a delightful surprise to see the old myth of the dragon with a taste for virgins cropping up in this atomic age, to say nothing of the new St George armed with 'special electrical instruments'. All the same there may be *something* behind this seemingly fantastic dispatch.

A young Pepson islander might disappear, or her dismembered remains might be discovered, without it having anything to do with a sea-serpent being seen in the area. In 1925 a French traveller had seen some strange little serpentine animals ringed with yellow and black in the China Sea which the Korea Strait links with the Sea of Japan. This new and unexpected report of a Korean sea-serpent may have been due to the political situation, for the event occurred at the time of the Korean war. Never before had Korea been disturbed by such a wealth of westerners. It is possible that Korean fishermen, and perhaps even Korean scientists, may have known a local sea-serpent for years, and we have only got wind of them because foreign journalists happened to be there. After all, if it had not been for the French Navy being there we should not have learnt of the dragon of Along Bay.

The British still remain the most assiduous reporters of sea-serpents especially around their own islands.

After a sighting at Skegness in 1966, Mr B. M. Baylis of Spilsby wrote to the press about a monster seen off the Yorkshire coast some twenty years earlier.

> On an afternoon in early August, 1945, we were sitting on the edge of the low mud cliffs at Hilston between Hornsea and Withernsea. There we saw a creature with a head and four or five rounded humps each of which was leaving a wake.
>
> It was moving rapidly but quite silently along shore northwards in face of a northerly wind.

Five years after this sighting, in 1950, A. G. Thompson of Swansea published an enthusiastic copiously illustrated book, *Gower Journey*, about the beauties of the Gower peninsula in Wales. There he tells how some years earlier he was on the top of the high, almost sheer cliffs at Fall Bay, on the very tip of the peninsula, when he saw what he thought at first was a floating log some 30 feet long:

> Suddenly one end moved and it became plain that a head like that of a Horse with a mane was standing out of the water and watching something on the rocks at the foot of the cliff. What a thrill!! After staring for what seemed minutes the monster appeared to be satisfied and dived with what looked like two distinct undulations of the hind portion. What an uncanny feeling! The writer waited some half-hour or more but there was no reappearance. A local expert was of the opinion that it was a real Sea Horse, so Lockness cannot boast that they have a monopoly of Monsters.

In the summer of the same year that Thompson's book appeared, John Handley of Wembley, Middlesex, reported a sea-serpent on the opposite side of Britain. He was bathing in the surf near the Lido at Cliftonville, a suburb of Margate in Kent, when he saw a strange animal with horse's ears rise out of the water less than 100 yards away. He said that the beast's head was more than 2 feet across. Nobody would have believed him if a woman on the beach had not also seen it.

Then in August 1953 some Scottish fishermen from Ayrshire said they saw a sea-monster about 30 feet long including 12 feet of tail in the Firth of Clyde. It had a camel's head, a giraffe's neck and a tail covered with long hairs.

The B.B.C. broadcast about the sea-serpent elicited, as I have already mentioned, a whole series of unpublished reports. A few days after it was broadcast on 12 February 1961 Mr Eric Robbins, a Doncaster ironmonger and dealer in bicycles and electrical equipment, told the producers in a very matter-of-fact and commonsensical letter that he had twice seen a monster 'of the type discussed'. First on 21 July 1954 in Loch Linnhe and then on 15 July 1960 in Loch Lochy. Now Loch Linnhe is a sea-loch linked to the freshwater Loch Lochy both by the River Lochy and the Caledonian Canal. And Lochy is linked by a river, punctuated it is true by a number of locks at

Leggan, to Loch Oich, which in its turn is linked by the River Oich and the canal to Loch Ness.

I am not trying to suggest that any creature larger than a salmon could make its way loch by loch from the Atlantic to Loch Ness: to do so it would have to wait at each lock until a boat was going through. The unknown animals in Loch Ness—or their ancestors—must have got in from the other end by the River Ness. But Robbins's two sightings provide a symbolic link between some sea-serpents and their freshwater counterparts and remind us of the clear identity between some of them. They also throw a strange light on the tendency which seems to drive sea-serpents to make their way into fjords in Norway, Iceland, England, Scotland, Ireland, British Columbia and New Zealand. I say *seems* because this conclusion may sometimes be based on purely subjective impressions. The higher an observer is above sea-level the better his chances of seeing an object on the surface of the waves: the old sailing ships had good reason to put the crow's nest high on the mainmast. And as I have pointed out this may be why sea-serpents have so often been seen from big liners. But the cliffs around fjords are far higher, and it could be because fjords are overlooked by so many excellent observation points that sea-serpents are so often seen in them. Even so there seems no doubt that some sea-serpents have a strong taste for coastal waters.

Let us now move down the North Atlantic and into the Mediterranean —not a sea where sea-serpents are often seen. Apart from the famous *Osborne* monster of 1877, there are only Mongitore's uncircumstantial accounts, the reports from Greece by an officer of the *Queen Eleanor* in 1912, Commander Plessis's dubious periscope and G. Juranville's from the Gulf of Ajaccio in 1924.

As for many other large sea-animals sighted there in exceptional circumstances—such as the Sperm-whale, Biscay Whale,[1] Humpback Whale, Sei Whale, and perhaps even the Blue Whale—the Mediterranean is not the sea-serpents' usual habitat: they only stray there, thinking perhaps, as they come through the Pillars of Hercules, that they are merely entering a fjord.

Such an accident may have been responsible for the sea-serpent said to have been seen in the Straits of Messina in 1953. But I can find no details about it whatever. Fortunately it happened again five years later in the same area. In August 1958 some foreign tourists were spearfishing underwater off Grillone, a beach near Copanello in the Calabrian province of Catanzaro. They were fishing from a boat about 80 yards from the shore when they found themselves face to face with a monster like a gigantic moray eel. Much shaken they hurried to the shore.

Once again we have a gigantic moray in the Mediterranean. For, if we imagine an outsize specimen of these 'painted eels', as they are sometimes called, we have something very like the huge serpents 'spotted in various colours' reported by Mongitore off the shores of Sicily in the eighteenth century, and the *Queen Eleanor*'s 30-foot sea-serpent with it 'camouflage' colour, seen off Greece in 1912. This repetition of very similar sightings in the same sea is instructive. The only sort of sea-serpents normally to live in the Mediterranean seem to be a sort of giant moray.

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[1] Another name for the North Atlantic Right Whale or *Nord kaper* (*Eubalaena glacialis*).

We now cross the North Atlantic to find a totally different type of monster. In June 1956 seamen of the cargo steamer *Rhapsody*, flying the Liberian flag, reported that they had seen a huge turtle about 45 feet long with an all-white shell south of Nova Scotia. The Canadian coastguards warned local boats about this gigantic reptile with flippers 15 feet long and capable of raising its head 8 feet out of the water. Now, in 1883, not far away on the Newfoundland Banks, a turtle 60 feet long and 40 feet wide had been reported. Here we may recall the Sumatran 'father-of-all-the-turtles' and the *aspidochelone* in Physiologus. But the reader may be more convinced by a report which has not been fetched so far, the Soay beast, a fairly similar, though very much smaller, giant turtle which was watched off the small island of Soay in the Inner Hebrides for an hour in September 1959. The two witnesses were men of a very different stamp: Tex Geddes, a tough and intelligent local shark fisherman, who had been one of Gavin Maxwell's crew before he set up on his own account—one could hardly wish for a man with greater experience of watching sea-animals—and James Gavin, an engineering inspector who happened to be on holiday in Soay.

Geddes published an account of it in his autobiography, *Hebridean Sharker* in 1960. He had already, soon after the event, written to Dr Maurice Burton, who made careful inquiries of both witnesses. He was convinced by their replies, and wrote: 'I am taking it for granted that the accounts given by Geddes and Gavin are objective and truthful.'

This was their story. On 13 September Geddes set out to go mackerel-fishing, when he saw Gavin sitting on the rocks. He asked Gavin, a keen fisherman, if he would like to come too, and together they put to sea. It was flat calm weather, and they could see clearly for miles around. After watching some killer-whales and a basking shark, Gavin noticed a black shape on the water about two miles away in the direction of the Skye shore. Although this was where the killer-whales had last been seen, Geddes did not think it looked or behaved like one of them.

> It was too high out of the water in the first place and it remained on the surface for several minutes at a time. When the object appeared to be steaming towards us we both stood up for a better view. I can't remember exactly how close it was when I heard the breathing, but I certainly could hear it before I could definitely

> have said that the object was alive. It was not making much speed, maybe 3 or 4 knots. We were soon able to make out two distinct objects, one larger than the other, and began making guesses as to what it might be. I am afraid we both stared in amazement as the object came towards us, for this beast steaming slowly in our direction was like some hellish monster of prehistoric times.
>
> The head was definitely reptilian, about two feet six high with large protruding eyes. There were no visible nasal organs, but a large red gash of a mouth which seemed to cut the head in half and which appeared to have distinct lips. There was at least two feet of clear water behind the neck, less than a foot of which we could see, and the creature's back which rose sharply to its highest point some three to four feet out of the water and fell away gradually towards the after end. I would say we saw 8 to 10 ft. of back on the water line.

Petrified, the two men watched the animal come closer and closer until it was parallel to the dinghy only 20 yards away. It kept turning its head from side to side, as if looking all around it.

> ... in profile the head appeared rather blunt and much darker than the rest of the body [which] seemed to be scaly and the top of its back was surmounted by an immense saw-toothed ridge ... it seemed to breathe through its mouth which opened and shut with great regularity, and once when it turned towards us, I could see into its cavernous red maw ... I saw no teeth ...

Geddes was surprised at how little it disturbed the water, and how gracefully it submerged.

> ... it arched its neck and leisurely put its head under the surface, the head completely disappearing before there was any appreciable movement from the body, which slid below the surface like a seal. ... Within seconds the head would break surface again and come clean out of the water before the body reappeared.

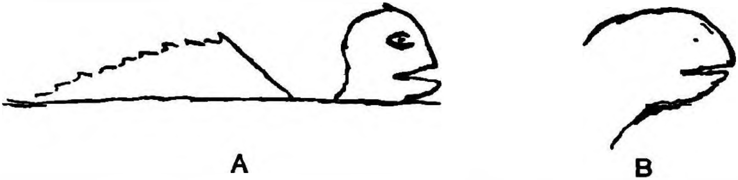
During one dive they saw a 'large darker piece sticking up well aft' but could not tell whether it was a fin or a foot.

> It was only when it was swimming away from us that we were able to see that the creature's body, although 4 to 5 ft. broad at the water line, rose sharply to almost a knife-edge at the top of the back.

The description which James Gavin gave Dr Burton agrees in the main with Geddes's and indeed complements it. The small points of disagreement are only to be expected, since the animal was moving and constantly diving. Moreover they show that there was no collusion between the witnesses:

> At the waterline the body was 6 to 8 ft. long. It was hump-shaped rising to a centrally-placed apex about two feet high. The line of the back was formed by a series of triangular-shaped spines, the largest at the apex and reducing in size to the waterline. The spines appeared to be solid and immobile—they did not resemble fins. I only got a lateral view of the animal but my impression was that the

> cross section of the body was roughly angular in shape. Apart from the forward glide I saw no movement.
>
> The neck appeared to be cylindrical and, at a guess, about 8 ins. in diameter. It arose from the water about 12 ins. forward of the body. I could not see where they joined; about 15 to 18 ins. of neck was visible. The head was rather like that of a tortoise with a snake-like flattened cranium running forward to a rounded face. Relatively it was as big as the head of a donkey. I saw one laterally placed eye, large and round like that of a cow. When the mouth was opened I got the impression of large blubbery lips and could see a number of tendril-like growths hanging from the palate. Head and neck arose to a height of about two feet. At intervals the head and neck went forward and submerged. They would then re-emerge, the large gaping mouth would open (giving the impression of a large melon with a quarter removed) and there would be a series of very loud roaring whistling noises as it breathed. After about five minutes the beast submerged with a forward diving motion—I thought I saw something follow the body down. It later re-surfaced about a quarter of a mile further out to sea and I then watched it until it disappeared in the distance (I have heard that the crews of two lobster boats, fishing north of Mallaig, have also seen this animal—much to their consternation).

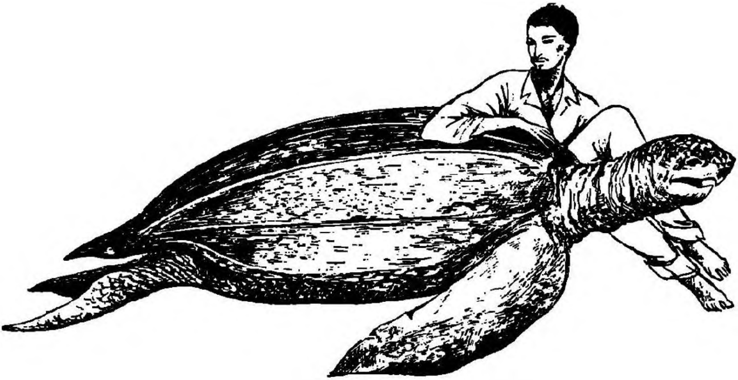


120. The Soay sea-serpent, 1959: A. after Tex Geddes; B. after James Gavin (*Illustrated London News*)

Mallaig is on the Scottish mainland, on the other side of the Sound of Sleat. In his article in the *Illustrated London News* Dr Burton includes not only the two very rough sketches made by the witnesses, but also a lively, if somewhat fantastic, reconstruction drawn by an artist on the basis of Geddes's account alone. When Gavin saw this drawing he said that the body was correctly depicted, though he could not be sure there were scales, and that the head should have been more like a turtle's.

I should point out at once that in Geddes's drawing the 'saw-toothed ridge' does not begin at once, but only after a straight smooth part, which suggests that it may be due to large scales, pointing backwards and overlapping like tiles, rather than a crest of triangular scales in a line as in the artist's reconstruction.

Dr Burton's first thought was that it might be 'an unusually large leathery turtle'. This huge beast, the largest of the turtles, is indeed sometimes seen



121. The Leathery Turtle, the largest of living turtles

in British waters in summer. On its leathery back it has seven longitudinal ridges, and Dr Burton says 'the greatest authentic measurements for the leathery turtle are 7½ feet overall, but there are unconfirmed reports up to 10 ft'. But he comes to the conclusion that, quite apart from the question of size, there are too many points of disagreement between the two descriptions for it to be a turtle of this kind; its jagged dorsal crest, while the leathery turtle has no scales, and its longish slender neck, while the leathery turtle's is particularly thick and fleshy. He recalls that strange animals have been seen three times in those waters in the last 150 years and that 'these seem to have borne some resemblance to the one under discussion'. Here he seems to refer firstly to the animal seen by the Rev. Donald Maclean off the island of Coll in 1808; secondly to that seen in 1872 by Twopeny and Macrae in the Sound of Sleat, then in Loch Hourn by them and by Lord Macdonald and then in Loch Duich by Alexander and Macmillan; and finally to that seen by Dr Farquhar Matheson in Loch Alsh in 1893. But I cannot agree with him that these animals—especially the second, a typical 'string-of-buoys' monster, and the third with its giraffe's neck—are at all like the Soay beast.

> In addition, [Dr Burton adds, more happily] there are scattered reports from other parts of the world—and I have others (unpublished) in my correspondence files—suggestive of large turtle-like animals seen at sea. There is also the famous sighting from H.M. Yacht *Osborne* which seems to have been turtle-like with a line of serrations along the back.[1] Taken together these do no more than suggest the existence of some large turtle-like animal so far unidentified.

[1] In fact the animal's back looked smooth and there is no reason to think that the jagged crest, seen earlier was actually along it. It was formed, I believe, by lateral appendages seen when the animal made a banking turn.

> A serrated crest is not uncommon among reptiles. Some terrapins (freshwater turtles) have a mid-dorsal line of serrations and if magnified to 10 ft. or more length would look very like the drawing made by Geddes. The leathery turtle belongs to a family (*Dermochelidæ*) separate from that of the other three marine turtles (*Chelonidæ*) and is regarded by some zoologists as an aberrant offshoot of some ancestral sea-turtle. The Geddes-Gavin 'monster' may be another, or it may be some entirely different reptile.

By publishing side by side the old engravings of the *Osborne* monster and photographs of various turtles, Dr Burton shows the astonishing resemblance between its jagged 'crest' and the conical scales on the carapace of the South American Matamata Turtle, and also between its rear view showing its raised ailerons and an underwater photograph of a turtle of the genus *Carettochelys* in exactly the same position.

It is very clear that the characteristic shape of the Soay beast, the fleshy lips, the absence of teeth, the bright red inside of the mouth, the long flexible neck, the jagged dorsal crest, the skin which seems scaly because it is wrinkled but does not have true scales, are all features found in turtles. Dr Burton points this out and also remarks that, 'Except to a person who has studied turtles closely such a combination of characters would appear incongruous.' He also recalls that freshwater and land crocodiles and turtles expel air rapidly through their mouths when they are alarmed, and that even in a small specimen this makes an appreciable noise.

To these features, some of which are very striking, we may add one which Dr Burton seems to have overlooked: the 'tendril-like growth hanging from the palate'. The Matamata has cutaneous filaments on its neck and around its mouth, making it look like a lump of stones and wood covered with vegetation. When these filaments wave in the water, they seem to attract little fishes and crustaceans within reach of the well-camouflaged turtle, so that it has only to open its mouth and gulp them in. Perhaps the Soay beast had a similar arrangement so that when it opened its mouth very wide the cutaneous filaments which fringed its lips seemed to hang from its palate.

This is not the first time that a huge turtle has been reported at sea, nor the first time that a sea-serpent has been described with turtle-like features, especially the head and neck and a hump covered with scales on the back. The largest Leathery Turtles are not more than 10 feet overall. Could there be sea-turtles two or three times as big? It is not anatomically or physiologically impossible, since we know that there used to be.

In *Archelon ischyros* that lived in the Cretaceous Period in the Sea of Niobrara, which then flooded Kansas, the carapace alone was 12 feet long and the skull 3 feet. The total length must have been getting on for 25 feet (Plate 75). There are some reasons for thinking that such giants might have survived. Aelian wrote about the Indian Ocean in the third century, 'This sea produces monstrous turtles, the shells of which can be used as roofs. Indeed a single shell may be as much as 15 cubits [about 24 feet], and spreads enough to cover a good number of people.' There follow various practical details about the use of such roofs.

Among the rich deposits of fossils in the Siwalik hills in Nepal, pieces of the shell of a tortoise (*Colossochelys atlas*) were found which measured 13 feet round the curve. It is hardly likely that third-century Indians should have used heavy and brittle fossilized shells for their roofs. Moreover Al Edrisi speaks of turtles like Aelian's as living creatures in his *Geography* which he finished in 1154. He says that the sea of Herkend, west of Ceylon, 'harbours turtles 20 cubits [about 30 feet] long, which contain up to a thousand eggs'.

Might not the sea-serpent with a turtle's head and neck that was reported in 1921 in a bay near Bombay be one of them?

The two huge turtles seen near Nova Scotia and the Soay beast are a long way from Indian waters, but *Archelon* in Kansas shows that giant chelonians once had a very wide area of distribution. Moreover the Leathery Turtle is today one of the big sea-animals which makes the most remarkable voyages. Normally it haunts the warm waters of the Atlantic and the adjoining Mediterranean, Gulf of Mexico and Caribbean. Yet specimens have been found as far south as the waters off La Plata in the Argentine, and as far north as the British Isles. And in the summer of 1956 three specimens were even caught at short intervals off the Norwegian coast.

It has often been objected with apparent reason that reptilian sea-serpents could not survive, since they could not live in such cold waters as those off Canada and northern Europe where sea-serpents are often reported. The Leathery Turtle's wanderings prove the fallacy of this argument, especially as they would be bigger and thus better protected against loss of heat.

We must linger a little while longer in Britain, for in the following summer on 7 August 1960 a 'sea-monster' was seen off Skegness in Lincolnshire. Two journalists from the *Skegness Standard* found five people from Wainfleet who had seen it from the beach near Gibraltar Point. Mr Ray Handsley, a butcher who had served in Coastal Defence during the war, and so had some experience of observing the sea, said he had never seen anything like it.

> It was difficult to judge how far out it was, maybe a mile or two, but it looked as if it was travelling along the edge of the deep water. It was just a long black line on the surface, about nine or ten feet long.

This line made straight for Skegness at a great speed which Mr Handsley estimated at 40 to 50 miles per hour. When asked if it could have been a submarine, he replied that it wasn't like one.

> It had no superstructure. It looked perfectly flat. The curious thing was that there was no wake after it.

Mr Handsley's wife, Ruth, thought the 'thing' was rather curved and had for a moment taken it for a whale, that it was 12 feet long and that it was certainly moving very fast. Only their eleven-year-old son Peter thought it was a submarine. Mrs Vera Digby said she thought it was a torpedo between 6 and 9 feet long and a foot above water (which is most unusual for a torpedo). Her husband, who was the first to see it, could not make out its shape but thought it was doing about 30 miles an hour.

Nobody, it will be noted, suggested that it could be an unknown animal. But this did not prevent the press christening it the 'Skeg-Ness Monster'.

During the following week it was seen several times, moving fast, leaving neither wake nor bow-wave. Then a Skegness hairdresser, Miss Pauline North, who had first taken it for a submarine, was staggered to see it take off into the air and realized that it was a flight of birds. As Mr A. E. Smith, secretary of the Lincolnshire Naturalists' Trust, remarked, they were Common Scoters, wild ducks of the species *Melanitta nigra*:

> They fly in parties only a few inches from the water, and in a very straight line, and when they are flying a long way off they look like a long black line.

Their speed may reach 45 to 50 miles an hour.

Those who believe that the sea-serpent is usually a flight of birds close to the water should not crow about this too soon. They need only compare these witnesses' vague and doubtful descriptions with hundreds of others in this book.

Down the east coast of America in the South Atlantic a new surprise awaits us. Not since a friend of Professor Silliman's met a sea-serpent off Uruguay in 1824 have there been any reports off South America far south of the equator. The furthest south was the *Valhalla*'s monster in latitude 7° 14′ S. But now, in February 1958 we have a sea-serpent causing much alarm in Rio Bay 1,400 miles further south.

Many bathers and fishermen said they had seen it. Walter Ferreira Da Rocha described it as 'a monster with a giraffe's neck, a hump on the back and a long tail'. Arnaldo Serapio Jesús, a fisherman, met the beast at sea and thought at first that it was a sea-lion, a common animal in that area. 'But when I came closer I saw that it was a monstrous green serpent with a head as big as a barrel; I at once made for the coast and gave up fishing for the rest of the day.' Mario de Castro Abreu, another fisherman, reported that it was as big as a big whale, but shaped like a snake. He saw it apparently asleep on the surface less than 30 feet away. 'Never,' he said, 'in thirty years at sea, have I seen an animal of this kind.'

This aroused a typically militant South American reaction: a special detachment of police, armed with machine-guns and dynamite, patrolled the bay to rid it of this unwelcome visitor, and thousands of bathers gathered on the beach to watch the patrol. On 10 February the police saw a dark mass by Governador Island, on which Galeão airport lies. They opened fire on the poor beast, which dived and, so far as I know, was not seen again—and who can blame it?

On the other side of the South Atlantic, and of South Africa, in August 1958 Ernie Stolz and the crew of the coaster *Golden Flame* said they saw a brown sea-monster near East London. 'It reared up, stretched its neck, then looked at the coaster. After that it slowly sank down into the sea and swam off.' When it came out of the sea it looked like a 'giant lion sitting up on its haunches'. It can hardly have been an ordinary sea-lion (*Arctocephalus pusillus*) found in South African waters, or the seventeen men would not have thought it worth reporting. There must have been something out of the ordinary about it, its size, perhaps, its unusually long neck or bigger mane than a sea-lion's.

Further up the coast we find the fishermen at Durban in great excitement on 1 December 1959. A whole troop of strange sea-creatures was met at sea. Captain Bill Nicholls of the fishing-boat *Congella* said he had never seen anything like them. There must have been twenty, he said, about 30 feet long. At first he thought they were whales. But they were dark grey and had a strange domed head with a weird protuberance. Two other fishermen had been frankly terrified when these animals escorted their boat and nearly capsized it.

A few days later, on the 9th, two yachtsmen had a similar alarm. Dr Hans Greissing and Mr Tom Evans were going up the Maydon channel in an outboard boat at 3.15 p.m. when they saw something like a huge wave. Dr Greissing goes on:

> It looked like a wave—only it just shouldn't have been there. So we bore over to investigate. We were going pretty fast, and all of a sudden we found ourselves sliding over something. There was a bump, and our propeller, which fortunately was on a hinge, was whirled upwards out of the water.
>
> Then we saw the object below us. It was an enormous creature swimming just below the surface. We could not see the head or tail—only the central hump some 10 feet or so long. It was about 2½ ft wide and seemed to be greyish-white on top with black sides. There was no sign of any fin.

I think we can eliminate this report, since the animals are very different from all the other sea-serpents—if only in being gregarious—and moreover they seem to be known animals. There are many cetaceans which are grey marked with black, many with domed heads and some even have 'a weird protuberance' called a beak. These Durban monsters are therefore probably members of the most mysterious family of whales, the Ziphiidae or beaked whales. We can also eliminate the monster seen in 1952 in Ifafa lagoon near Umzinto, Natal, by Gerald Pemberton and Nowell Udal. Their descriptions could refer to a big python, and the earlier accounts of other anglers to a hippopotamus, an animal which I have been able to confirm on the spot occasionally makes journeys along the coast.

Let us now cross the Indian Ocean to Darwin on the north coast of Australia, an area where no sea-serpent has yet been reported, where we find that an animal thought to be one has been appearing in the harbour since 1955, when two women, one of them a nursing sister, saw a sea-monster passing at such a great speed that it went right across the huge port in ten minutes. They said it was at least 100 feet long and that it showed a series of humps which rose and fell on the surface as it swam. Then in October 1959 Alan Carter, proprietor of the Mandorah hotel, said he had seen a long black object, a good 100 feet long, flying above the water at 80 m.p.h.! He added that it shone with green flashes—which could have been phosphorescence in its wake. The bathers at Darwin were naturally terrified.

Several days later J. C. Slaggert said he had also seen the animal crossing the harbour at a staggering speed and making strange noises.

The Navy took an interest, anxious to know whether a Russian submarine might not be spying on Australian waters. They searched and found nothing.

Then an old Darwin fisherman, Ted Maloney:

> It's my old mate the giant devil ray, and it is 40 feet long, 25 feet across, and weighs several tons . . .
>
> It's the biggest ray I have ever seen [he added], and would look even bigger in clear water. Seen from a distance with its shadow behind, it could easily seem 70 to 80 feet long.
>
> It has a top speed of around 40 m.p.h.—but this also looks a lot faster when you see it ploughing through the water.

While it is true that the biggest of the rays, the Manta or Great Devilfish, is apt to leap above water and thus seem to be flying, this lazy fish's speed on the surface is generally fairly slow. No specimen more than 22 feet across or heavier than 1½ tons has been recorded. But Ted Maloney's dimensions may be somewhat exaggerated. All the same his explanation is sound enough to make this sea-serpent very doubtful.

We shall find a better sea-serpent at Deception Bay near Brisbane where it was reported in the very beginning of 1960. A fisherman called Ron

Spencer said he had seen it five times and that it had surfaced near his boat and gazed at him and his companions with 'strange staring eyes'. He said that its head was 2 feet long and 3 feet wide and that it had 'no neck'. Nigel Tutt of Hendra said:

> I saw it five times in the one day. It swam within eight feet of my boat. It was a mottled brown with a squarish head the size of a full cornsack, a body three feet across, and it was 18 to 20 feet long. It seemed to have nostrils, a yellow mouth and fins six feet back from the head.
>
> It appeared to be very friendly, but there are a lot of people down here who want to put a bullet into it. I want to photograph it.

If only he had! For the worst of snapshots would have told us more than his vague description as it appeared in the papers. Were the fins on the back or the sides? Did he also notice the eyes? Where was the mouth, and what shape was it? Was the skin smooth, scaly or furry? And so on ...

One ought to be able to describe an animal seen only 8 feet away pretty minutely.[1]

Much further north, in the north of Queensland, homeland of the impossible *moha-moha*, Robert Duncan, a beachcomber on Bribie Island, reported in September 1962 that he had seen a 'horrible monster' two miles off Woorim, it was 'something out of a nightmare'. He watched it for four minutes through field-glasses, and said:

> It was whitish-grey in colour, about 12 feet long, and seemed to have a swan's neck, a whale's body, and a fish's tail and fins.
>
> It repeatedly raised its neck out of the water, and then flipped its strange tail.

This is a fairly straightforward description of our old friend the tailless *Megophias* with its webbed hind-feet, held together as a seal's often are, looking like a vertical fish-tail. But it could not possibly be a basking shark, as Mr George Mack, director or the Queensland Museum suggested.

A fortnight later Duncan saw it again six miles from the north point of Bribie Island and was able to complete his description. He said that the long neck had a fin (a hairy crest) and increased his first estimate of length to about 20 feet and added:

> Its snout, instead of being pointed, is flat like a pig's. It has two little holes near the centre. They'd be its nostrils, I suppose.

On the other side of the Pacific it is pleasant to find more news of our old friend Caddy. On 13 February 1953 some ten people saw him, from different points of view, as he swam for more than hour in Qualicum Bay. On the whole their accounts agree. Frank Waterfall said the beast seemed to be 50 feet long, had a head like a seal's and two or three humps on its back.

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[1] Nevertheless, a further sighting, between Scarborough and Deception Bay in 1962, was even more vaguely described by James Kentworth as 'a strange animal'.

A year later, on 24 and 25 February 1954, several inhabitants of Nanaimo and W. Baldwin and some thirty other people saw the monster, this time with a horse's head, basking on the surface of the water some distance from the shore. Caddy again? It is hard to see how the same beast could have both a seal's and a horse's head, but this shows ignorance of anatomy and psychology. In fact if we analyse people's testimony we find that the terms of comparison used depend upon the feature which happens to have struck the observer. If it is the whiskers, the beast is compared to a seal, if the mane, then to a horse.

On the other hand as the shape of the head alters with age—in mammals the skull is always most nearly spherical at birth—the same animal may resemble a seal and a horse in turn.

At the end of April 1958 a sea-serpent 12 feet long and 1 foot thick was seen off Whidby Island in Puget Sound (State of Washington) by several people including the Rev. John Oosterhoff of Mount Vernon Presbyterian Church. Its undulations made it hard to observe, but as it was only sixty miles from Vancouver Island it could well have been some kind of cadborosaurus.

Then on 19 July 1959 Caddy was of course reported again when a jagged dorsal crest was seen some 100 yards away cutting through the water at very great speed, by a whole family from Victoria who were fishing from two boats near Race Rocks. They were Jamie Cameron, the grandfather, his two sons Alan and Griffith, his nine-year-old grandson Greg and his son-in-law Bud Johnson.

In 1960 a Sidney couple said they saw Caddy on Boxing Day. He was half a mile off the town and heading southwards, raising his head 8 feet out of the water. Their attention was first drawn by clouds of gulls which seemed to be diving at him.

More than a year later, in February 1962, a sea-serpent was again seen in British Columbian waters, but this time the description no longer entirely agrees with that of Caddy, who seems to be one of those big-eyed long-maned sea-serpents so often seen in various parts of the world. Mrs Maclean saw it first from her country house on the Campbell River on Vancouver Island. When her husband, Alan, came home, he saw it too and at once telephoned his friend Ted Smitheringale. But, before Smitheringale could get there, two fishermen shot at the monster, which at once disappered.

Mrs Maclean reported that the animal was about 18 feet long; about 4 feet from its snakelike head it had a big bulbous hump on its back which appeared above water. The body, which was creamy yellow with a pattern of red like veins, ended at the rear in a darker ball. The Macleans said that it wallowed among the floating seaweed for about a quarter of an hour. The fishermen who fired at it thought it was a sea-lion, but Mr Maclean said that as they were at sea-level they could not have seen it properly, while he and his wife could see it much better from 40 feet up.

No doubt we shall never know what this strange sea-monster really was. It must have looked like an anatomical drawing of the circulatory system of a traditional sea-serpent. Perhaps it was merely a cadborosaurus in an abnormal condition—sick or moulting. At all events it caused poor Alan Maclean, who seems to be perfectly sincere, to receive a flood of mail which included an invitation to lecture at a forthcoming Liars' Congress, a card offering him honorary life-membership of Alcoholics Anonymous and at least two offers to have his eyes tested free of charge.

This was how the wags behaved, their jests corresponding to the public opinion of the time—or at least to that of the journalists. But what did 'serious' people, naturalists who had studied the question with some care, think?

Rupert T. Gould died in 1948, but the baton was taken up by others, by men who were better qualified in natural history than he was. In 1947 the sea-serpent's case received valuable support from Ivan T. Sanderson, a Scottish naturalist with a Cambridge degree in zoology, botany and geology, who settled in the United States after a quarter of a century of travelling the globe studying and collecting animals. For it was in 1947 that he published a very well documented and argued article, 'Don't Scoff at Sea-Monsters' in the *Saturday Evening Post*, eliciting a most valuable correspondence of unpublished reports. He made use of these in another article, 'What-is-its of the Sea' in another American popular magazine, *True*, in December 1948, and this also acted as a catalyst.

Although we have never met, Ivan and I have become very good friends, having many tastes and interests in common. When he was still a student he invented the word 'cryptozoology', or the science of hidden animals, which I was to coin much later, quite unaware that he had already done so. It was one of his articles which set me off on the track of unknown animals, so that I have now been a full-time cryptozoologist for fifteen years. We have worked hand in hand so much on our opposite sides of the Atlantic that he wrote in his book *Abominable Snowmen* (1961): 'Frankly, neither of us knows any longer, in many cases, exactly just which items come from which in the first place.' This book owes a very great deal to him, especially as he has let me see all his files and his correspondence about unknown sea-animals.

In his 1948 and 1949 articles, which were straightforward popularization, he did not attempt to put forward any new theories about the sea-serpent, his opinion being much the same as Oudemans's, except that he thought there was more than one kind.

> The many descriptions, when analyzed together, seem to indicate the existence of one or more species of large mammals related to the seals, with bodies shaped like the ancient fossil marine reptiles known as plesiosaurs.

In 1948 Willy Ley, a German zoologist who had likewise settled in the United States, also came to the sea-serpent's defence. He wrote a chapter on the Great Unknown of the Seas in *The Lungfish, the Dodo and the Unicorn*, in which he tells the story of various animals which are fabulous, undiscovered, recently extinct, or 'living fossils'. His learning is not surprising, considering that he specialized in the history of zoology and palaeontology at Berlin and Königsberg universities, and that Germans are usually so painstaking in such research. Although his purpose is merely to write the history of the subject, Ley takes Oudemans's line that the beast is a mammal.

It was also in 1948 that A. Hyatt Verrill, a tireless writer on natural history, included a documentary chapter on the subject in his book *Strange Prehistoric Animals*. He lists the various theories about what the monster is: plesiosaur, ichthyosaur, mosasaur, zeuglodon, archaic shark, or unknown conger; and he admits the possibility of several species without plumping for one of them. It could equally well be either a supposedly extinct species or an anomaly in the sea, just as the okapi was an anomaly on land. But in *The Strange Story of the Earth* he adopts the classic theory, so dear to the British:

> even the most skeptical must admit that there 'must be something' in the innumerable reports of such sea monsters. All agree as to the appearance and average size of the creatures, but the rather unusual, or I might say remarkable, part of these descriptions is that they quite accurately describe the ancient Plesiosaurus, or a marine reptile very similar to that ancient beast.

In Europe there were also scientists who defended the monster. In 1950 the German geographer Richard Hennig, who had been interested in the subject for forty years, included chapters on the Loch Ness monster and the sea-serpent in his book, *Wo lag das Paradies?* Though favourable to their existence, he does not put forward any particular theory as to what they may be.

I have already discussed Dr Anton Bruun's giant eel theory, based on the discovery of a gigantic leptocephalus. This was the theory which my friend Dr Maurice Burton, then Assistant Keeper at the British Museum (Natural History), favoured in 1953. Since 1946 he had been writing on zoological subjects on the scientific page of the *Illustrated London News*,[1] and he also put forward his views in *Living Fossils* (1954) and *More Animal Legends*

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[1] This special page was started in 1900 by Dr Andrew Wilson of the Edinburgh Medical School, whose interest in the sea-serpent I have already mentioned. And we owe a very great deal to this fine magazine for the part it has played in helping to elucidate the mystery by keeping the public informed of the affair for over a century, and incidentally thus eliciting new evidence and new theories.

(1959). But in the latter book he opts for 'a possible multiplicity of animals responsible for the sea-serpent'.

> we can accept giant eels as a high probability, because giant eel larvae have been found. Oudemans' sea-otter cannot be ruled out. A third possibility, which has been put forward from time to time, is that we have to deal with a plesiosaur.

Like a true Briton, it is the last theory that he prefers. He sees no reason for rejecting the possible survival of an animal thought to be extinct for neither more nor less time than the coelacanths. He thinks it possible that some plesiosaurs had become viviparous and no longer needed to come ashore to lay. And he points out that on all the plesiosaur skeletons he had examined the nostrils were situated immediately in front of the eyes almost on the highest point of the rather flat skull.

> This can mean only one thing: that plesiosaurs could surface to breathe without showing more than the barest top of the head, possibly no more than the nostrils. Even in a calm sea, this much could pass unnoticed at fairly close quarters.

Nor need we be surprised at finding no recent fossil remains, when so many oceanic cetaceans are known only from one or two washed-up specimens, and everyone admits that there may be other quite unknown ones.

All these arguments are perfectly valid. But we already know the weakness of the theory of a surviving plesiosaur, a slow animal with a rather inflexible neck, quite incapable of undulating vertically, and thus not agreeing with most descriptions of sea-serpents. Professor Samuel W. Williston of the University of Chicago remarked very truly in 1914:

> Textbook illustrations of the plesiosaurs usually depict the necks, like those of the swans, freely curved ... But the plesiosaurs did not and could not use the neck in such a way. They swam with the neck and head, however long, directed in front, and freedom of movement was restricted almost wholly to the anterior part. The posterior part of the neck was thick and heavy, and could not have been moved upward or downward to any considerable extent and not very much laterally. From all of which it seems evident that the plesiosaurs caught their prey by downward and lateral motions of their neck, rather than by quick swimming.

This hardly agrees with the astonishing speed and supple contortions of the long-necked sea-serpent. All the same we must congratulate Dr Burton on his admirable summary of the problem:

> The case of the sea-serpent represents not so much a study in marine zoology as of human psychology. Give a subject a high-sounding name, cover it with ridicule, procure from some eminent person a statement condemning it (it matters not how little that eminent person knows of his subject) and it then becomes necessary to produce the most unimpeachable evidence to obtain even a hearing for arguments in favour of it.

In 1957 another British writer on natural history, Richard Carrington, joined the ranks of the sea-serpent's supporters in that brilliant and well-documented book *Mermaids and Mastodons*. But here we have a British naturalist who for once does not favour the plesiosaur theory. It is true that he finds Oudemans's conclusions somewhat naïve. But he has no doubt the sea-serpent is a mammal:

> Personally, rather than the theory of a huge, seal-like animal, I would suggest that at least some of the appearances could be accounted for by an ancient and as yet undiscovered species of whale. For example, the whale known as *Zeuglodon* or *Basilosaurus* ... would be a very suitable animal to cast in the role of sea serpent ... Smaller members of the group are already known to have survived until at least the beginning of the Miocene Epoch just over 30 million years ago, and there is certainly no reason why some of their larger relations may not even now linger in the seas.

1956 was an important year in the recent history of the sea-serpent, for it was then that Ivan Sanderson's book, *Follow the Whale*, a study of whales and whaling, was published. The book was much criticized in zoological circles for some of its outrageously audacious remarks. But it includes some lines which throw much new light on the problem of the sea-serpent and indeed of the freshwater unknown animals:

> Perhaps there are Acrodelphids still cruising the oceans, Zeuglodons browsing in lakes, lochs and fjords, the ancestors of these in tropical rivers, and even some 'First Ancestors' on their banks.

His book was also criticized for some errors and exaggerations. And I admit I have often taken Ivan to task for accepting too enthusiastically evidence which seemed to me doubtful and too hastily theorizing upon it—trying in fact to do too much too quickly. But all this is nothing compared to his driving force without which no new theory would see the light of day.

Were it only for another illuminating passage which offers the key to the whole of the problem of the great serpentiforms, *Follow the Whale* should be recognized as work of genius.

In considering the size of the various known cetaceans Sanderson considers that four chief types can be distinguished:

1. Very small (5 to 10 feet), which are merely like land animals adapted to life in the water.

2. Small (15 to 25 feet), which are very large for mammals, but are buoyed up by the water which makes their movements easier and indeed normal.

3. Large (25 to 55 feet), which use volume to overcome certain difficulties caused by their great size.

4. Giant (60 to 90 feet), which keep down their geometric bulk by increasing their length and adopting another form.

The basic difference between the last two types is well illustrated by the contrast between the right whale, which tends towards a sphere, and the big rorquals which become longer and longer.

But, wonders Sanderson, may there not be super-giants beyond that?

> There presumably is no limit to size in oceans, but there probably are limitations on form as one moves up in length. If there are two hundred foot creatures as yet undiscovered in the sea, they will probably prove to be greatly elongated or serpentine in form, whether they be seals, whales, or other mammals, or even fish.

And had he thought of elasmosaurs, mosasaurs or thalattosuchians he might have added 'or even reptiles'.

Thus is would seem that *all* sea-animals must become elongated and serpentine as they increase in size. So if there are unknown giants in the sea belonging to various classes of animals, the possibility is that they would *all* be taken by inexperienced observers for huge serpents, and taken together they would *all*, despite anatomical differences, which might be very great, give rise to the legend of the Great Sea-Serpent and keep it alive. Perhaps even their exceptional suppleness and speed has helped to keep them unknown longer than the others.

This review of modern scientific opinion about the sea-serpent would not be complete without that of Professor J. L. B. Smith, to whom we owe the description of *Latimeria*, the miraculously surviving coelacanth, and who has himself survived the ridicule of sceptics on that subject. In an article published in 1960 in a South African magazine dealing with the chemical and explosives industry—of all things—he calmly states that there are three distinct categories of sea-serpent reported. Some seem to have been of the zeuglodon type, but most are more like that other fossil, the plesiosaur. And then there are those, such as the *Daedalus* and *Umfuli* monsters, which are probably a gigantic creature like an eel.

What a long way we have come since Pontoppidan's and even Oudemans's belief in a single type! And what a contrast between the opinion of this learned zoologist and universally recognized expert on marine fauna, who admits three distinct types of sea-serpent, and the layman who laughs at the monster's very name!

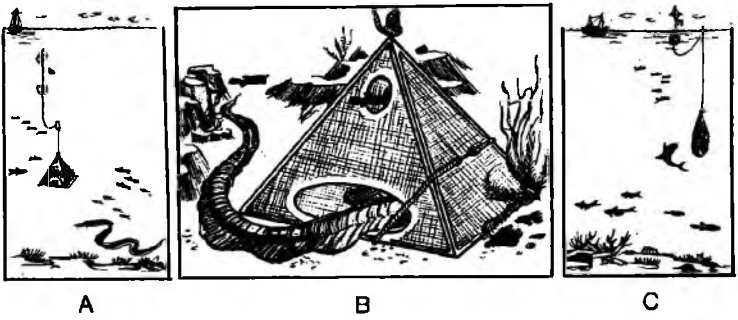
There being so many competent zoologists who are convinced of the existence of sea-serpents, whatever they may be, it is not surprising that attempts are being made to catch them. But what seems hard enough in lakes like Loch Ness, Storsjön, or Lake Okanagan, is almost impossible in the ocean. Yet this has not discouraged those seeking to make the most splendid catch of all time.

One of the scientific bodies most concerned with our problem is the Scripps Institution of Oceanography of La Jolla, California. The director, Roger Revelle, thinks that if reports of the monster have become scarcer recently it is because 'fast, noisy, modern ships make poor platforms for serpent sighting', thus sharing the view put forward by poor Denys de Montfort around 1800. But nobody called Revelle a charlatan or a fool.

The expert on the sea-serpent at the Scripps Institution is John D. Isaacs, the biologist working on various kinds of traps intended to catch large unknown or little known sea-animals. One of these traps is a cage shaped like a square-based pyramid; its frame is of aluminium and supports a glass-fibre net. A large hole, level with the base invites crawling animals to take refuge in the cage, and a smaller one near the top is meant for swimming animals.

Ballasted with a sheet of iron which forms the base, the cage is dropped at sea and sinks to the bottom, where it lies moored to floats full of petrol, from which it hangs, and to a signal buoy. The heavy metal base is fixed to the cage by an elastic cable fastened by a magnesium link. After a space of time long enough to collect specimens the link corrodes away and the cage, suddenly freed from its ballast, is raised to the surface by the floats. As it also loses its rigid square base it folds up on itself and imprisons the animals inside it. On the surface the signal buoy, which carries a radar reflector, a flag and a flashing light, enables it to be picked up quickly.

The first conclusive tests were made with a small prototype with sides 6 feet long, and a model twice that size was designed in 1959. It was then planned to make ever bigger ones to capture even bigger prey, in particular adults of Dr Bruun's giant leptocephalus, which, like all self-respecting eels,



122. Plan for a net to trap large unknown sea-animals

would surely be tempted to enter and lurk in holes such as that provided by these pyramidal cages.

To catch really huge prey like giant squids or the larger sea-serpents, Isaacs also considered a sort of circular net several hundred feet in diameter with a central weight and floats round the edge. At a given depth the weight would be released, and the net would rise like a parachute upside-down, collecting, as it rose, everything in its path, however big.

Nor was the Scripps Institution the only American scientific body to consider catching a sea-serpent. On 15 October 1958 the *Vema*, Columbia University's oceanographic research vessel, left New York for a ten months' cruise, intending to make a special study of the deep waters off the west coast of South America and in the South Atlantic. When they were 200 miles off Lima they fished up from 2,500 fathoms in the oceanic trench parallel to Peru and Chile four specimens of a new species of *Neopilina* which they called *Neopilina palaeozoica* to distinguish it from *N. galathea* discovered by the Danes in 1952. But this did not satify Dr Robert J. Menzies, an expert on marine biology from the University of Southern California. He wanted to catch a sea-serpent.

During his career Dr Menzies had had frequent dealings with Dr Anton Bruun and was much taken with his view of the animal's nature. Like Bruun he thought the Chile-Peru oceanic trench, some of the richest waters in the world in plankton, should be a likely place to catch giant eels. He therefore had the *Vema*'s engine-room forge a huge steel hook, 3 feet long, which he attached to the hydrographic cable used for dredging. He was going to angle for a sea-serpent.

The cable had a breaking strain of 2½ tons and was handled by a big winch. Dr Menzies decided to fish on a moonless night, for then the monster would be most likely to venture above its cold black depths.

> After lashing a large squid caught earlier in the day to the hook, I weighted the line with a 30-pound sinker. My only fishing partner was Tom Dow, the expedition's winch operator, who got up at two o'clock in the morning to operate the world's most cumbersome fishing-reel. The winch rapidly lowered the bait to the 1,200 foot mark—probably the nethermost region ever fished with the baited hook.[1]

After long waiting there was a violent pull on the line.

> Tom Dow and I looked at each other in amazement. Whatever was at the other end of that line had the strength to jar a three-foot iron hook, a 30-pound weight, and a steel cable one-fifth of a mile long. The winch was started immediately to keep a constant pressure on the line.

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[1] Dr Menzies is much mistaken. In the Canaries the fishing industry regularly uses a hook and line at more than 800 fathoms in order to reach the zone of contact with deep plankton. This is, of course, most exceptional.

> A few seconds after we began hauling in we noticed a slackening in the cable stress. The instant the hook broke the surface the ship's lights disclosed the sturdy iron hook bent, the squid gone—and nothing more.
>
> It was the oft-told angler's lament about the 'one that got away.' I can't prove it, but I believe the fish that hit and ran 200 fathoms under the sea could have been man's first nibble from a sea-serpent. I'm going back to fish with more and stronger hooks, and I think some day we'll land history's most elusive monster.

Though I have every sympathy with Dr Menzies's enterprise, and his optimism delights me, I think his assumptions are quite unjustified. For there are many known animals in the ocean quite capable of doing the deed. A sperm-whale, for example, weighing 100 tons, could easily swallow a 3-foot hook baited with giant squid and tug at a cable 1,200 feet long. With its taste for the gelatinous flesh of these cephalopods, it could hardly fail to do so. Even that other squid-eating whale, the Bottle-nose, which, when adult, weighs more than 3 tons and is 30 feet long, could easily have bent the hook.

There are sharks which could have robbed the bait, such as the White Shark (*Carcharodon rondeleti*), which seems able to exceed 60 feet, and even the Tiger-shark (*Galeocerdo*), which is no more than 30 feet. Both are most voracious, and their muscular mass weighing several tons has titanic strength. And for the great *Architeuthis*, whose weight is measured in tens of tons, the feat would be child's play.

Indeed I doubt whether Dr Menzies could have hauled any of these animals on board if he had hooked them. Those weighing more than 20 tons would have broken the line almost at once. And even the small ones could not have been hauled out of the water when they were dead, for their weight is more than the cable's breaking strain. This leads one to believe that Dr Menzies did not think that the sea-serpent, which he supposed was a giant eel, could be very big.

As a 5-foot eel weighs about 20 pounds, we can calculate that a specimen twice as long would weigh eight times as much ($\times 2^3$), and this is confirmed when we find that congers and morays nearly 10 feet long weigh about 160 pounds. It is simple to show that, if these proportions were unaltered, eel-like fish 35 feet long would weigh about $20 \times 7^3 = 6{,}860$ pounds, and be much too heavy to be hauled out of the water with Dr Menzies's cable. So what chance would he have of catching a 50-foot eel, which by the same reckoning would weigh about 10 tons? Yet this is Dr Bruun's most conservative estimate of the size of the adult of his giant leptocephalus.

It is no easier to draw out leviathan with a hook than it was in Job's day.

This does not mean that there is no point in trying to catch sea-serpents with specially designed nets and traps, especially if large numbers were used systematically, for chance is still the snark-hunter's best hope—and it is best to have the probabilities on one's side.

But we should not be too hopeful. So far the only way large sea-animals—the various whales—have been caught is by harpooning them on the surface, and they are animals that announce themselves by regularly coming to breathe on the surface in a particularly spectacular fashion. It is quite a different matter with animals which breathe more inconspicuously or have gills: no *Architeuthis* has ever been harpooned at sea, except the *Alecton*'s, which was found dying.

In any case, to try to catch a sea-serpent with a hook or a net, when nobody has succeeded in doing so with a whale or a giant squid, is to try to run before one can walk.

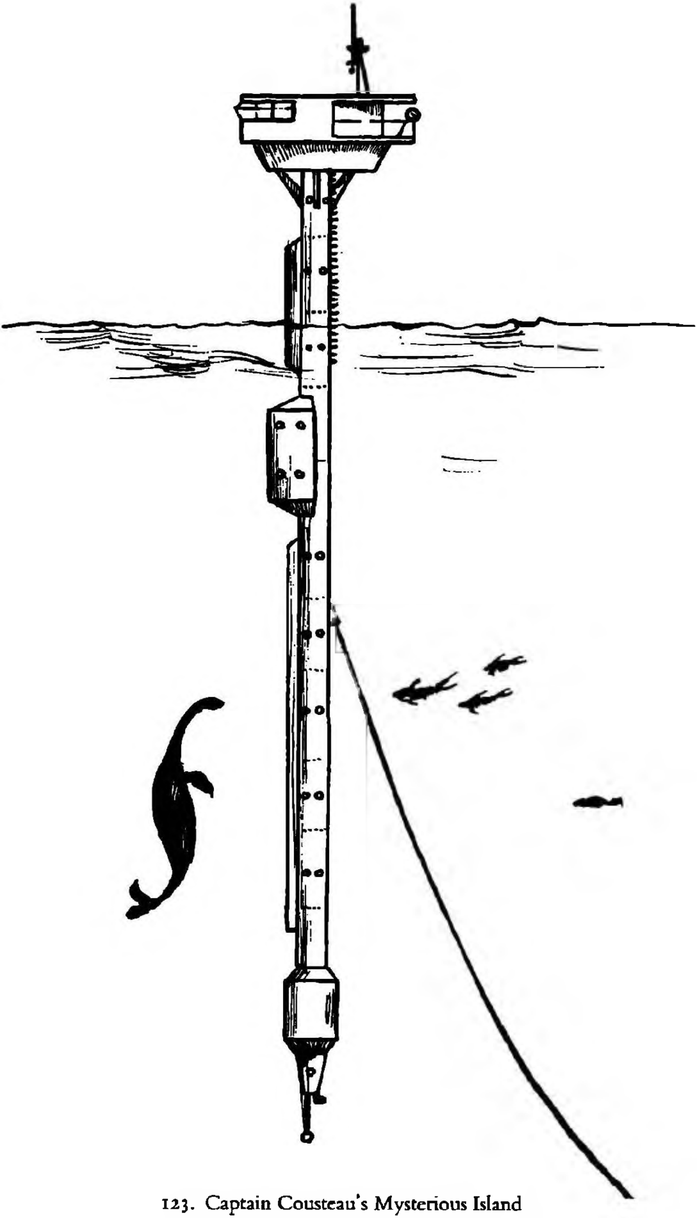
It seems to me that the best hopes of finding out more about unknown sea-monsters lies in using new devices for underwater exploration, which might enable one to surprise them *in situ*, and take films and photographs of them. The late Professor Auguste Piccard showed the way with his bathyscaphe, a device which has also been developed by the French and United States navies, who have descended with it to the deepest trenches of the ocean.

To study large unknown sea-animals—and even those known ones about whose private lives we know very little—there is no need to dive very deep. The biggest animals seem unable to live in the great depths, for 600 fathoms reached by the sperm-whale must be a quite exceptional record. I think the zone to be patrolled is from the surface to the threshold of total darkness, which lies between 180 and 280 fathoms, according to the clarity of the water.

We must thank the genius of Captain Jacques-Yves Cousteau, now director of the Oceanographic Museum of Monaco, for the aqualung, which enables us to explore the upper layer down to 30 fathoms. To explore lower levels, Cousteau devised a little two-seater flying saucer, which went into service in 1960, and can easily dive to 200 fathoms. A stronger spherical hull could reach 500 fathoms.

The drawback of all self-contained devices for observing large oceanic fauna is that their arrival, with motors roaring and searchlights shining, disturbs these shy creatures, which are able to make off before they can even be seen.

Just as on land the best way of studying wild animals is to build fixed observation posts which they eventually come to accept, the ideal solution would be to make similar fixed observatories in the sea. For this reason Cousteau's latest project is of especial interest: it consists of a fixed oceanographic station half-way between Corsica and the mainland, from which the sea down to a depth of 25 fathoms can constantly be observed. This laboratory buoy, called the Mysterious Island, is like a gigantic hydrometer, a huge watertight tube 227 feet long, kept floating upright by ballast at the bottom, and with only the top out of the water. To prevent it from floating away, it is anchored to the bottom with one or more nylon or polypropylene cables.



123. Captain Cousteau's Mysterious Island

An automatic device is intended to neutralize its motion with the swell, but stabilizing it properly still poses considerable practical problems.

To my mind, placing such observation posts, if possible even deeper ones, in various places in the ocean—carefully chosen not only for the numbers of large serpentiforms seen there but also for the clarity of the water—offers the best practical chances of solving the problem that has puzzled naturalists for so long.

Meanwhile public and scientific opinion must be persuaded of the need for such projects by means of public inquiry and discussion by the press, radio and television. And here we are much indebted to Maurice Brown and Martin Chisholm for having produced a fascinating discussion on the great sea-serpent which was broadcast by the B.B.C. on 12 February 1961.

The ten participants were well chosen and represented several different and sometimes opposite points of view. Besides three eye-witnesses (a naval officer and two biologists) there was a sceptical palaeontologist and an incredulous biologist, a naval officer and a biologist who were both convinced that the sea-serpent was due to misinterpretation of known animals, and finally three zoologists who defended respectively the plesiosaur and giant eel theories and a more eclectic point of view. The forces were well balanced.

Not all the eye-witness reports were of equal value, but if they were not detailed nor always convincing they were at least sincere. First there was the testimony of John Drummond, who was second officer on H.M.S. *Buster* of the Freetown Escort Force when he had a strange encounter off the Gold Coast at the beginning of 1944. The ship was patrolling at dusk, searching for a German submarine that had been reported. Drummond was on the bridge when he saw a big ray 5 to 6 feet in span, which despite its size leapt out of the water like a trout after a fly. He wondered what would have frightened it as to make it jump so high, when the look-out shouted, 'Huge object on port beam!'

> That [said Drummond] was gentle understatement. I have seen something of the like since—in horror movies, but this thing, in slow motion, heaved itself out of the depths, remained suspended for four to five seconds and then fell forward with a thunderous splash.
>
> I think Able-Seaman Fitzgerald of Pimlico was the look-out concerned. I think that, because when I interviewed him afterwards, he described the manifestation as:—'Like the side of a big building rumbling down in the London blitz.' The asdic operator on duty ... held a sharp underwater contact on his set, then lost it on the recorder as the thing dived.

Drummond immediately reported it in the log. He was convinced it had not been a big whale. This was at once confirmed by Lieutenant-Commander Oli Bernhardt Egjar of Tönsberg, a Norwegian, then attached to the Royal Naval Reserve, who had hunted whales in the Antarctic before the war.

> Then what was it? [wondered Drummond]. Distances at sea are often very deceptive. Our main mast was well over sixty feet high. The thing seemed about that height, at a guess. In the dusk I could see no eyes. The suggestion of a tail, yes. But the most vivid impression was the thinness of the creature.

The next creature is much less impressive than this sort of gigantic eel, but it is none the less puzzling. It was seen by Finn Devold, a Norwegian biologist at the Bergen Institute of Marine Research, when he was on the oceanographic vessel, *Johan Hjort*. They had just finished charting the section 100 kilometres northward from North Cape and were sailing east parallel with the coast. It was three o'clock in the morning, and the sea was like a mirror, when Devold saw a strange thing 500 or 600 metres away.

> It looked like something standing up from the sea about a yard above the surface. I pointed at it and told Mr. Sune [the captain]; 'What is that?' And when he discovered it he told the wheelman to turn the ship against it, and we moved against this obstacle about 200 metres and it sank down in the sea again, and when we arrived at the place we could see nothing.
>
> We were discussing what this was and it had a thickness of about 20 centimetres I believe, and the height above the sea was about one yard. And it couldn't be a seal because I have seen so many seals before that time, and a seal has a shape like a bottle of champagne or something like that, and this was an even thickness from the head down to the sea board. I have never been sure of what we saw but it looks like a living creature ... it might be a piece of wood, but if it was we should have discovered it later.

Another biologist, P. G. Corbin of the Marine Biological Laboratory at Plymouth, had also seen an animal he had been unable to classify when he was working aboard the Royal Oceanographic Vessel *Discovery*. He was not sure whether it had happened on the 1952 or 1954 cruise, but it was in mid-Atlantic near the Azores.

The weather was bad, and they had just had lunch. There was nobody on deck except the men on watch. Corbin was stowing some ropes in the stern, when, happening to look over the side, he saw what he described as his 'private sea-monster'. As it was already astern and the ship was going full speed ahead, Corbin had no time to call anyone else and merely observed the animal through binoculars for five to eight minutes before he lost sight of it.

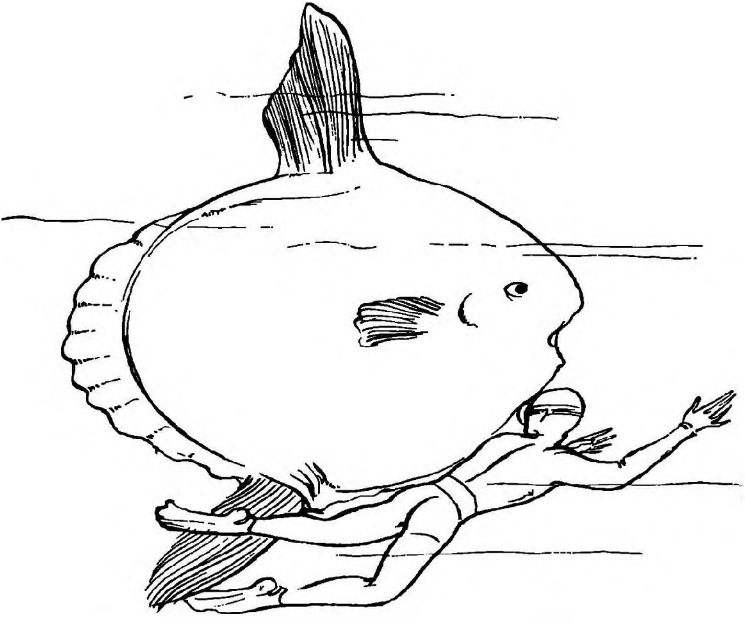
> I can't identify it as any kind of animal and it there remains entirely as the private sea-monster. All I would go as far as to say is that I'm convinced it was animal, because it was moving, it didn't break surface, it was large, very roughly quadrangular, I would say about 10 feet long by six, seven or eight feet broad, of the usual monster greyish colour [?] below the surface of the water.

Corbin, who was very familiar with sea fauna, said it could not be a whale, a turtle, a giant ray, seaweed nor any kind of wreckage.

> It could only, [he adds] of the known large animals, have been a very large sun-fish, but, I think of the known records, it appeared to be far too large to be identified as a sun-fish.

I fear I must contradict Mr Corbin on this point and congratulate him on having probably identified his monster correctly, for specimens up to 11 feet long have in fact been recorded of both the Rough or Short Sunfish (*Mola mola*) and the Smooth or Oblong Sunfish (*Masturus lanceolatus*). As these huge millstone-shaped fish are apt to loll on their sides in warm and temperate waters, it could very well have looked like what Mr Corbin saw, and this report had better be excluded from our dossier.

But one *probable* mistake does not justify general negative conclusions, especially as Mr Corbin's 'private sea-monster' was not in the least serpentine.



124. The size of a Sunfish (*Mola*) compared to a diver

Nor does the *certain* mistake described in this broadcast. So there is no special importance in the story told by Dr Gunnar Dannevig, director of the Flödevingen Biological Station in Norway. One day his father, Alf Dannevig, the biologist, thought he saw a sea-serpent, but it turned out to be a big salmon. On the strength of this Dr Dannevig maintained that most stories of sea-serpents were based on similar mistakes, due to the particularly unfavourable conditions for observation at sea. And this generalization is no more justified on the grounds of Captain Arne Grönningsaeter's tale, which I have mentioned on page 78, of how he thought a giant squid that tried to attack his tanker was a sea-serpent.

When these doubtful or mistaken reports are eliminated, there still remain plenty which cannot honestly be explained by any known phenomena. How did the zoologists interpret them on the air?

Dr Denys Tucker, who had strongly defended this view over the Loch Ness monster, argued with his usual warmth that the reports collected by Oudemans and Gould showed that the sea-serpent was a plesiosaur. Dr Anton Bruun, whose trump card was the proved existence of enormous leptocephali, confidently argued the case for a giant eel.[1] Only John Colman, Director of the Marine Biological Station at Port Erin on the Isle of Man, wisely took a more eclectic line. He thought that some thirty sincere and authentic reports could only reasonably be explained by the existence of one or more kinds of unknown animals. Giant eels or plesiosaurs? Mr Colman thought there were at least two kinds.

The adversaries would not have much difficulty in weakening these positions, and for two reasons which will now be familiar to the reader, the defenders generally took too exclusive and limited a view, and forgot that most of the great serpentiforms are very clearly mammals.

The first reason meant that the defenders were not united. Dr Tucker argued that it could not be an eel, because so many witnesses had mentioned a narrowing at the neck and a thicker body, and that the head was sometimes at an angle to the neck, which is quite impossible for a fish. Moreover eels do not have the humps on the back so often described, humps which Dr Tucker maintained were solid and not due to undulatory movement—except of course when seaweed moved by the waves was mistaken for a sea-serpent!

Dr Bruun replied that as plesiosaurs were animals that lived on the surface near the coasts, we should have had proof of their survival long ago. Moreover, he said, the least doubtful encounters with sea-serpents took place in mid-ocean, where the witnesses described them like huge eels, quite without humps. When humps did happen to be seen, these could be due to huge abyssal eels undulating on the surface as they swam on their sides, dying due to decompression.

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[1] He was only able to do so once more in public, during one of my television films, before he died unexpectedly when barely sixty, leaving a tragic gap which it will be very hard to fill.

Although Mr Corbin stressed that the sea-serpent should not be thought of specifically as a plesiosaur, giant eel, or *Architeuthis*, but the important thing was that there were one or more unknown animals in the sea, it was no use. The supporters' camp was riven by contradictions, of which their adversaries took advantage.

Dr William Swinton, the celebrated palaeontologist, admitted that there was no reason why there should not be big unknown animals in the sea, and directed his fire against the plesiosaur theory, but not all his arguments were equally on the target.

The plesiosaurs were surface animals, he said. Nobody had ever seen one (a specious argument, since we are trying to explain how hundreds of witnesses saw an animal which was like a plesiosaur, if only in outline). They were oviparous and must therefore come ashore to lay. Nobody had seen them doing so or found a single egg, to which Dr Tucker rightly objected that, like their cousins the ichthyosaurs, the plesiosaurs might have evolved towards viviparism.

Plesiosaurs, Dr Swinton went on, were freshwater animals. It was true that their remains had been found in marine deposits, but this was chiefly in the estuaries of the rivers where they lived. How could they have survived in the open sea? Adaptation to purely marine life entails a radical change in their whole physiology. To which one might reply that there is no reason why they should not have undergone such a change, and that most palaeontologists think that plesiosaurs were truly marine animals.

Plesiosaurs, Dr Swinton even asserted, no doubt with Scottish and Scandinavian sea-serpent sightings in mind, were not European but American. This is a complete blunder, for plesiosaurs are found all over the globe: the most famous coming from Holzmaden in Germany and Lyme Regis in England. No doubt Dr Swinton was thinking of the elasmosaur which is more elongated, more sea-serpentine than the European plesiosaur. It should be mentioned all the same that there were elasmosaurs in Australia and New Zealand as well as America, which shows the extent of their area of distribution. A dwarf type (*Brancasaurus*) has even been excavated on this side of the Atlantic in Germany. In any case palaeontology, which relies on such an exceptional phenomenon as fossilation, can only give a faint notion of the distribution of animals in past ages.

Dr Swinton admitted that he did not believe in the sea-serpent because he had never seen one (a bad reason, for could he really claim to have seen *everything* he believed in?). He did not believe in it because nobody had ever seen a plesiosaur, photographed one, or found the fresh remains of one. But he said nothing about sea-serpents which were *not* plesiosaurs.

Dr Carlisle first tackled the theory of the giant eel. He thought that a 5-foot leptocephalus would produce an adult 10 to 11 feet long, and that would be a very paltry sea-serpent. Moreover, it if had humps it couldn't be an eel.

But did the sea-serpent really have humps? Dr Carlisle wondered. The name sea-serpent, was nonsense. As people thought they were seeing a serpent they imagined coils, which are impossible for a serpent. It was all imaginary (unless it was a mammal!)

Dr Carlisle attacked points picked out here and there from the various arguments in favour of the sea-serpent, but became so confused and contradictory that his own argument is hard to follow. The sea-serpent, he said, seemed to be an animal with lungs, not a fish. Fishermen would never confuse a basking shark or a conger with a sea-serpent. If it is an animal with lungs it most probably is a reptile (Why?). But animals with lungs cannot dive deep: a sperm-whale cannot go below 600 fathoms (Isn't that deep enough?). Therefore, thought Dr Carlisle, sea-serpents must live mainly on the surface. But whalemen combing the oceans had never seen one, nor had any professional zoologists except those on the *Valhalla* (Won't they do?). Sea-serpents are usually seen in calm, and therefore misty, weather in the Tropics (And elsewhere?). The mist so distorts distances that a little 18-inch sea-snake close by looks like a large sea-serpent a long way off (Really?). Many sightings could be explained by encounters with known animals. And as to that kernel of observations which seemed to refer to an unknown air-breathing animal like a plesiosaur Dr Carlisle wanted to see the body before he was convinced, adding, 'I think you really prove the crime when you've got the corpse.'

This last sentence sums up Dr Carlisle's dogmatic and fallacious arguments—typical of those would-be scourges of the sea-serpent. For it is a popular misconception based on a mistranslation of *corpus delicti*, which really means the body of evidence, not of the victim. As Professor Bergen Evans has pointed out in *The Natural History of Nonsense*, a body 'is a good thing for the prosecuting attorney to have, but it is not absolutely indispensable; convictions have been secured without it'. And I have already dealt with the question of evidence earlier in this book. It is a pity that the programme ended with Colman's unduly cautious statement:

> I'm not in the position of swearing on the Book that I believe in the sea-serpent. I believe in them, but I'm not prepared to swear that I know that they are true. I certainly think that these cases can reasonably be explained only by there being honest and genuine sightings of one or more kinds of very large animals, but we have no other evidence for them at all, we've got no hard parts. All we want is about one bone, at least I'm sure Swinton would only need one bone.

In fact, as I'm sure the reader will agree, the sea-serpent's existence has been proved long ago, by testimony, evidence and (for a few lucky people) by direct observation. What we have to discover is the nature of the animals that have contributed to the formation of the legend. And the discovery of a bone—or even the capture of a specimen—would resolve only one aspect of the problem.

Personally I wish the programme had concluded with a most pertinent interjection from Dr Denys Tucker, which puts the problem in exactly the light in which it should always be considered:

> The use of the word belief in relation to the sea-serpent is one that always annoys me. It rather implies something on the line of a religious belief that you can't possibly confirm in a laboratory. It implies that a person may be suddenly convinced by some act of conversion that a certain religious belief is true, or that a belief in the sea-serpent is true. I don't think you should look at it in that way at all.
>
> If we take our ordinary textbooks of zoology that most of us cheerfully imbibe during our undergraduate years and only learn to mistrust afterwards, we find countless statements that we take simply as faith in the sense that we can't possibly prove them by personal observation. In the case of the sea-serpent we have to deal with the fortunate people who, frequently with quite a large experience of all the normal things to be seen in the sea, have seen something quite definitely beyond their experience, have described it in very careful detail and have frequently had their descriptions corroborated by independent witnesses of the highest integrity, and I think we must take these statements in very much the same way as we take the statements in our textbooks. We must trust them with scepticism if we must, we must look to a further proof, but we cannot discount them simply as seamen's tales or anything of the kind.

I have nothing to add to these words of a man who had studied the question of the sea-serpent deeply, and who, by defending his point of view too bitterly (but with understandable bitterness)—sacrificed his job and risked his professional reputation—like Denys de Montfort and Rafinesque.

Meanwhile the sea-serpent went on appearing, but unfortunately not all the accounts of it were well calculated to shake the general incredulity. For instance, in July 1965, Edward Brian McCleary told the readers of *Fate* an extraordinary tale of how, three years earlier when he must have been only sixteen, four of his skin-diving companions were apparently killed and eaten by a 'carnivorous' sea-monster. He confirmed most of this in a letter which Tim Dinsdale prints in *The Leviathans.* The divers were lost in the fog five miles out to sea off Pensacola, Florida, on 24 March 1962, when they heard a loud hissing noise, smelt a sickening odour and saw a 10-foot pole-like object making for their rubber raft.

> The silence was broken once again by something out in the fog. I can only

> describe it as a high-pitched whine. We panicked. All five of us put on our fins and went into the water. Patches of brown crusty slime lay all over the surface.

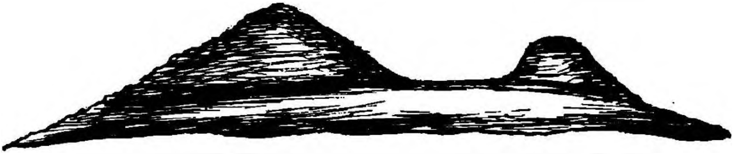
Exactly what happened then is left rather vague. There were screams from his comrades. The beast had a turtle's head, but longer, and green eyes with oval pupils. McCleary finally managed to spend the night on the wreck they had come out to dive on.

What are we to make of all this? Is it literally true, a complete hoax, or is there some other explanation? I have not had time to look for, let alone find, independent confirmation of any of this tale, since I learnt of it only just before the English edition went to press. Without confirmation we can hardly accept it as evidence; for even if it is not a hoax, and McCleary is really as sincere as he seems to be, despite his rather sensational style, I don't think a boy of sixteen, already frightened because he was lost in the fog, was likely to be in a fit state to observe accurately what was happening—still less so, after his four companions were dead. Perhaps, as with M'Naughton in the Bristol Channel in 1907, there may be a basis of fact, but here we have no such sober and respectable witness as Sir Arthur Rostron to corroborate it.

Another 1962 report is much more acceptable. On 3 February the *Scottish Daily Mail* reported that Mr Jack Hay had seen a 30- to 40-foot monster with a 3-foot head and a long body and neck on the beach at Helensburgh before it slithered into the water. It left a giant footprint on the sand and much frightened his dog.

In 1963 we have a rather less sensational sighting off Iceland, the origin of one of the earliest reports. On Wednesday 13 February, Agust and Sigurjón Jónsson, two brothers who were fishermen from Vopnafjörthur on the north-east of the island, were returning from lifting their shark-fishing lines, when they saw near Skålasker rocks a very large creature whose behaviour puzzled them. It did not leap forward as whales do when they surface to breathe, but rose vertically. And the shape of what appeared was, as *Morgunblathith* reported, no less puzzling:

> Two humps or crests appeared. The front one was shorter and lower than the back one, which was much longer and higher and tapered away at the end.
>
> Small indentations could also be seen along the rear of the back crest, which was estimated at about 3 feet long, while the whole of the creature that appeared above water was about 15 feet long. The back crest rose more than 3 feet out of the water.
>
> The beast's back was black in colour and shone like a whale's skin. The two brothers saw the creature surface five times, and though they came within 12 fathoms of it they did not see it breathe. It merely sank slowly below the surface of the waves again.
>
> Agust and Sigurjón Jónsson think that fifteen minutes elapsed between the beast's first appearance and its final disappearance.



125. The Vopnafjörthur sea-serpent, 1963, after A. and S. Jónsson

> At that moment they had driven it inshore, where the depth was only 2 or 2½ fathoms. During the chase they could always see its wake and were thus able to follow it.
>
> What also puzzled them was that every time it surfaced it always showed them its right side.
>
> A little more than an hour later, the creature was twice seen to surface a little further from the shore than the place where the brothers had left it. It was a chauffeur, Asgrimur Kristjánsson, who was driving alongside the fjord in a car, who saw the beast twice.
>
> It has not been seen again since.

When the ichthyologist Jón Jónsson was questioned about it he said it might be a *Brandháfur* or Grey Shark (*Notidanus griseus*). This shark, which may reach a length of 15 feet, normally lives in the warm waters of the Mediterranean and South Atlantic, but it is known to stray as far north as Iceland. Its most conspicuous feature is the incredibly long upper lobe of its tail fin, which forms nearly a third of its total length.

When this explanation was put to the fishermen, and they were shown a picture of *Notidanus griseus*, they said at once that it could not possibly be that fish. The creature they had seen was much bigger, and the back fin (or hump) was quite a different shape from the *Brandháfur*'s tail. Moreover the front fin (or hump) was much bigger than that fish's dorsal fin. So that there should be no more confusion, they made a careful drawing of what they had seen above water when the creature curved down gently in order to dive, its front hump or crest going under first.

When he saw this drawing Jón Jónsson changed his tune and thought that it must have been a small *Architeuthis*, and his colleague Ingimar Oskarsson concurred. They said the back crest must be a lobe of the cephalopod's tail and the front crest one of its tentacles. (Shades of Henry Lee!)

This theory is quite indefensible. First of all the tail of an *Architeuthis*, when placed horizontally, is not shaped like an ace of diamonds, as in some smaller squids, but lanceolate like an ace of hearts, so that a giant squid could never show a triangular fin when swimming on its side. And, while it is quite possible for a squid to appear on its side occasionally, it is most unlikely that it would do so seven times running—and in no other position. In point of fact it is most abnormal for a squid to swim on its side. It is one of the few aquatic animals that has no need to do so when turning, since it can move in any direction merely by shifting its locomotor siphon.

What then was it? Certainly no animal known to zoology. The second hump (or fin) with its indented rear edge reminds one of the Soay beast, and, if it is the same animal, the first hump must be the top of its round head.

On the other hand it recalls the sea-serpent with a big dorsal aileron which H.M.S. *Hilary* used as a target, also in Icelandic waters. But this type is more generally met on the Atlantic coast of North America, where it is particularly characterized by a long series of humps when it appears on the surface.

The more recent sea-serpents from the traditional New England waters are also something of a puzzle. In 1957 the scalloper *Noreen* reported seeing 'something with a very large body, weighing perhaps 35 to 40 tons, whose alligator head rose 26 feet in the air'. The body was shaped like a seal's and there was a mane of bristly hair or fur, which ran down the middle of its head, 'the portion visible measured about 40 feet in length ... at no time did the whole body show'. There is no mention of either a long neck or humps, nor is the bristly mane of the type we have come to recognize. The figure of 26 feet would seem to imply a long neck, except that it is remarkably exact, when all the other dimensions are in found figures. Perhaps in the seven years between the sighting and its being reported in a New Bedford newspaper 2′ 6″ got changed into 26′, in which case it might be a Massachusetts Bay sea-serpent after all.

The one seen by the crew of the *Blue Sea* on 12 May 1964 thirty miles south of Round Shoal buoy, Nantucket, has some features in common with the *Noreen*'s, but is on the whole more conventional. At first they thought it was a whale and went after it, but when they got closer, they realized that it wasn't. It was black and at least 50 feet long. It had several humps, and there was a 'blowhole in the top of the alligator-like head'; it seemed to 'skim along the top of the water' at about 8 knots.

Ten days later a New Bedford newspaper reported that another local fishing-boat, the *Friendship,* had met a very similar creature, perhaps the same individual, forty miles east-south-east of Great Round Shoal buoy.

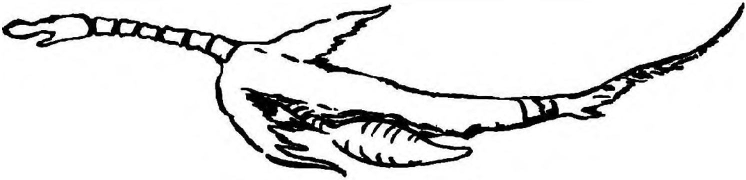
> The body was deep blue or blackish and 'where the neck joined the body was irregularly scalloped.' ... it had a light grey dorsal projection, triangular in shape and rounded on top. This was about 4 feet long and meaty looking. On the back were two blow-holes, pear shaped or oval ... where the mouth area might be was a very light colour.

Apart from the blow-holes on the back (of the head?) this seems to be a conventional New England sea-serpent.

Several months later Massachusetts saw an almost exact repetition of the

Stronsa beast affair. Just before Christmas a strange carcase 18 feet long was found by Elmer Costa and another fisherman at Skaket Beach near the town of Orleans. The *Cape Codder*'s reporter described it thus:

> It lay with its long serpentine tail pointed slantwise up the beach, its tiny head (perhaps the skeletal size of a raccoon's) at the end of four feet of snaky joints and bones, looking for all the world like a baby pterodactyl, widening in the middle into a structure that could have been wings gone swollen by decay.



126. The Skaket Beach carcase, 1964

Despite the mention of wings one may well ask what a pterodactyl—a little flying Mesozoic reptile no bigger than a pigeon—has got to do with it. If the journalist had anything in mind it was probably a plesiosaur—which happens to be a pterosaurian.

When Dr Richard Backus of the Woods Hole Oceanographic Institution arrived on the spot, he saw at a glance that it was a basking shark. And indeed, as the reader will see from Fig. 126 this was clear enough from the sketch which the *Cape Codder* published soon afterwards. Once again a basking shark had decomposed to look like a plesiosaur.

After the French edition of this book appeared, a reader, M. Jacques Borelli of Marseille, wrote to me that at the end of May or beginning of June 1964 he had seen something that he thought would interest me near the Balancelle buoy off the mouth of the Grand Rhône.

> I was spinning for mackerel with my son in a slight chop, when, looking astern, we suddenly saw, about a hundred yards away, a shoal of mackerel leaping as if they were being chased. Then there appeared a sort of beam, light chestnut, cylindrical in shape and with a rounded end. This 'beam' of which the part out of the water must have measured 6 feet in length and about a foot in diameter, was sloping forward and moved without our being able to see any wake at that distance, then it disappeared after about 30 seconds.

Apart from the colour we seem to have here, after twenty-five centuries, one of the 'animals like beams of wood' which Aristotle's informants must have seen in the same Mediterranean.

I owe the next report, hitherto unpublished, to the kindness of my friend

David James, who runs the enterprising Loch Ness Phenomena Investigation Bureau, which is using all possible means to solve the mystery of that lake's monster. The thoroughness and care with which these details were collected are a model for such inquiries.

Colonel H. G. Hasler, who is equally well known for his gallant leading part in the canoe raid on Bordeaux harbour in 1942 and his enterprise as a yachtsman, and who spent the summer of 1962 patrolling Loch Ness in his yacht *Jester*, was told by the Hon. David Astor in October 1966 that one of his stalkers on the Hebridean island of Jura had seen an unidentified sea-animal. Hasler thereupon wrote to Mr Neil MacInnes, the stalker, sending him the Bureau's standard questionnaire, an even more thorough and detailed document than that of the Linnaean Society of New England.

He received the following reply:

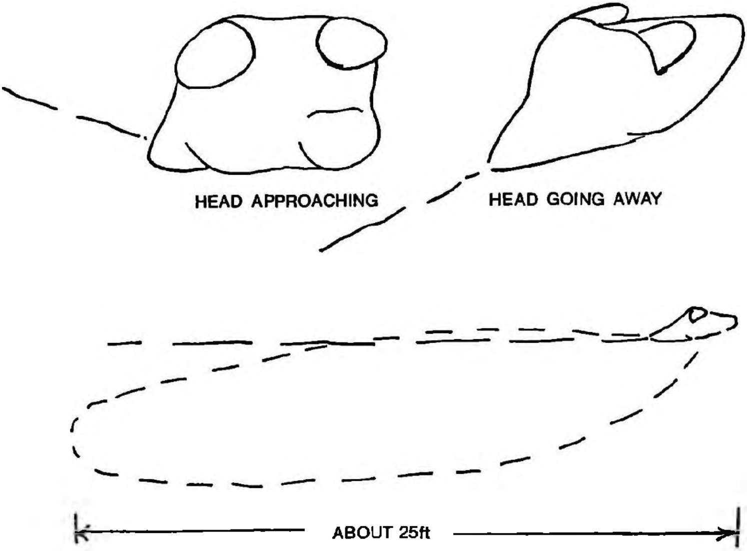
Name & Address
NEIL M. MACINNES. GATEHOUSE. CRAIGHOUSE. ISLE OF JURA. ARGYLL.
Age–38. Occupation–Stalker.
Other Witness–Mrs Lily MacInnes.
Date–Early June 1964. Time–4.30 P.M.
Bright sunlight. Visibility Excellent.
Duration of sighting twenty minutes.
Position at time of sighting one mile from Tarbert and two miles from Lagg. Height above water level–200 ft. Slack tide with a slight North to South movement. Flat calm.
Position of object from Witness–250 yards. From shore line–200 yards.
No known witnesses of sighting.
Telescope of medium magnification. Ross.

Description of sighting.

The object first observed about two miles distant travelling in the Sound of Jura in a Southerly direction. At this distance the object resembled a large box floating in the tide. Interest was increased when object seemed to be moving faster than the, then very slow, tidal stream. I drove about one mile closer to the object, which on closer inspection appeared like a cow's head. At this time there appeared to be no body to the object; by that I mean it still appeared lifeless. As the object came directly opposite I put the telescope on it and could see the rest of the body plainly visible in the water.

Through the telescope the head still appeared very cow-like but what had looked like horns, now were seen to be large white lumps at each side of the head. As the object passed the body appeared more distinctly even to the naked eye. I estimated the overall length to be around twenty-five feet. The body itself appeared to have great depth and seemed to taper slightly towards the tail. There was no sign of eyes or ears. The object moved steadily in the one direction but leaving no wake or disturbance behind it. The head continually moved from side to side. The object remained above water during the whole sighting (two miles approx.).

The tail end of the object seemed to be no more than five feet below water



127. The Jura sea-serpent, 1964, after Colonel H. G. Hasler

> surface. I would like to stress the point that the visible part of the BODY appeared to have great depth (in no way snake or eel-like) and seemed out of proportion with the head which was fairly small in comparison. There was no indication as to how the object propelled itself through the water. The estimated speed would be about six miles per hour. This was fairly easy to estimate as the object swam parallel to the shore during the whole sighting. The skin seemed to be of smooth texture and grey in colour, with no signs of humps or such and no fins or tail like a fish.

Colonel Hasler replied with further questions and an attempt to draw what MacInnes had seen but felt unable to draw himself. On receiving his answers, Hasler redrew the pictures more to the satisfaction of MacInnes, who wrote:

> They are much more alike to what I saw than the previous sketches. The side view one is very close to 'sighting' in appearance although on paper it looks rather clumsy. The rear end of 'sighting' looked just as blunt as shown on sketch. No part of the back was visible above waterline; just the head alone.

These drawings at second hand give one a good idea of what the MacInneses saw, but they do not enable us to tell which kind of unknown animal it is. The two 'white lumps' on the head certainly seem to be eyes, but it is hard to tell whether they are big eyes like those of the maned sea-serpent which might look milky from certain angles—or small prominent eyes ringed with a light colour, as in the many-humped New England sea-serpent. One would need to have a clear view of the neck or the back to settle the question.

Another event in 1964 seemed as if it were going to shed much new light on our problem, for it produced what seemed to be the first photographs of a sea-serpent. They were taken by Robert Le Serrec, a Breton photographer who sailed with his wife and family on his yawl *Saint-Yves d'Armor* from France in 1960 and was eventually wrecked on the Great Barrier Reef near Mackay, Queensland. There he bought a motor-boat and decided to spend three months on Hook Island, one of the Whitsunday group, with his family and a young friend from Sydney called Henk de Jong.

At 9 a.m. on 12 December 1964, or so he told the press, they were crossing Stonehaven Bay to fetch fresh water when Madame Le Serrec pointed out something strange on the bottom of the sea to her husband, who was in the cockpit checking his diving gear. The two men came on deck. De Jong thought at first it was a big tree-trunk, twisted into an S, lying on the white sandy bottom less than a fathom down. But soon they both saw that it was like an enormous tadpole: a huge head followed by a thin flexible body about 30 feet long.

Le Serrec rushed to fetch two 16-mm. ciné-cameras, and his wife to load the cameras, while de Jong took the helm. They cruised slowly, at a respectful distance at first, around the huge beast which remained perfectly still. The three adults were very excited, but the children had seen so many sea-beasts on their voyage that they took it as a matter of course.

After taking several stills and filming the animal without it taking any notice, they circled in towards it, trying to make it move, for half an hour. They saw it had a big white mark, nearly 5 feet long, apparently a wound, on its body, and its head was rather like a snake's. This last word so alarmed the children, who had been brought up to fear snakes, that they had to be taken back to the camp in a dinghy.

The grown-ups were then free to take close-ups and in doing so saw that it had two white eyes on the head, and brown rings at regular intervals along its body. It still remained motionless, and they thought of throwing stones at it to make it move, but did not do so since they feared the reactions of a creature that could smash their boat with one blow of its tail.

The men then decided to look at it under water and try to film it with an underwater camera. Its gaping wound and white eyes made them think it might be dead, and they wanted to be sure.

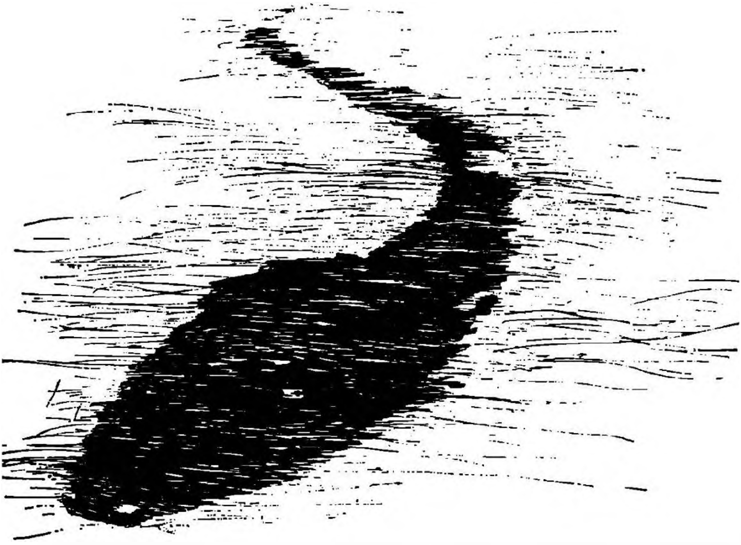
Henk de Jong armed himself with an underwater rifle, which was very effective against sharks, but which would be but small defence against this monster. Le Serrec dived first with the camera, and De Jong followed. The water was not so clear as had seemed from above, and they had to get within 20 feet of the 'serpent' before they could see its features which Le Serrec described thus:

> Its skull seemed very flat and at least three feet thick. The lower jaw was flattened like that of a sand fish. The skin was smooth and also dull.

Le Serrec started filming when:

> Suddenly the mouth opened in a menacing manner, like a moray when disturbed, half shut and then opened again several times. Barely moving, the front of the animal began to turn towards us (we were filming it from the side).

More dead than alive, Le Serrec let the camera run a little longer and then both men turned about and fled. When they were back on board the boat—the motor had stopped and Madame Le Serrec had not been strong enough to start it—they learnt that the monster had made off, undulating laterally slightly and raising a cloud of sand, and had gone out to sea through a gap in the reef. They did not see it again.



128. The Hook Island sea-serpent, 1964, from a photograph. The eyes are the light patches on top and not at the front of the head. The open wound is marked by a big white patch

Le Serrec and De Jong reckoned that their sea-serpent was 75 to 80 feet long. The head was like a snake's except that the skull was higher and rounder. It was nearly 4 feet wide at the greatest width of its jaws and was about the same height; it was 8 to 10 feet long. The body was no more than an even 2 feet thick for 25 feet and then tapered to a whiplash.

There were no fins, nor spines of any kind. There did not seem to be any respiratory orifices, but the witnesses admitted that their attention was focused on the menacing jaws. They did not see any teeth, and supposed they must be small. The mouth was at the bottom of the head: the inside was white, a strip of dark substance hung from the top of the upper jaw.

The general colour was black. On the head the colour was lighter in places and turning to brown. The brown rings, a foot wide, were 5 feet apart on the body. As the animal was lying on the sand, and even sunk a little into it, they did not see the colour of the belly which seemed to be flat.

Its eyes were 2 inches across and were very pale green, almost white, and with a vertical slit pupil. The skin was more like a shark's than an eel's. No scales could be seen.

They thought that it had been wounded, probably by a ship's screw, and, its spinal column being damaged, it could not defend itself against small carnivorous fish, which had been attracted by its gaping wound, and so it had taken refuge in shallow water where they would not venture.

The Le Serrecs and their friend cautiously decided to say nothing until their films were developed, and it was not until 4 February 1965 that Robert Le Serrec told his story to the press. This soon had Ivan Sanderson ringing me up across the Atlantic, for Le Serrec, hoping for the best price, had sent his photographs to America, where Ivan had been asked to check them.

I did my own checking on Le Serrec in France and found that he had left unpaid creditors in France and did not seem very trustworthy. Ivan had the photographs—handsome colour transparencies—examined by the experts at Fawcett publications, and they could find no sign that the pictures had been tampered with.

Ivan considered the various commonplace explanations of what he saw in the photographs, and, after rejecting most of them, was left with three:

1. It was one of those plastic sausage-shaped bags which the U.S. Navy had used for experiments in towing petrol.

2. It was a deflated Skyhook balloon which had fallen in the sea and gradually become covered with weed.

3. It was a huge roll of cloth—a circus-tent for instance—which had been suitably lashed together and deliberately thrown in the water.

The first theory was discarded when the U.S. Navy said none of these containers had been lost near Australia and that they had a metal superstructure and were the wrong shape. The second theory would not hold water either. If a Skyhook balloon bursts it disintegrates in the sky. If it is punctured it falls slowly and is recovered. And if it lay on the bottom long enough to be covered with weed the coral would tear it to rags.

There remained the third theory of a deliberate hoax. There were two possibilities. Firstly that some piece of wreckage was accidentally discovered on the bottom and its serpentine shape suggested the hoax. Whereupon it was made to look more plausible by being decorated with eyes and rings, which would be easy enough in 6 feet of water. Secondly that a plastic 'sea-serpent' was made beforehand by sticking sheets of plastic together, and that it was then put overboard and ballasted with sand to keep it on the bottom.

I was very inclined to think that it was a hoax, if only because of the position of the eyes, which looked to me most unusual. Most vertebrates—and this is very noticeable in the fishes—have eyes pointing sideways, and some—like the primates—have them pointing forwards; but there are hardly any with them pointing upwards, as in the Hook Island sea-serpent. This arrangement is, it is true, found in some marine vertebrates like the flatfishes and rays which live on the bottom and bury themselves in the sand like this monster. But their eyes are always nearer to the nose.

Le Serrec's story also had some suspicious details. If he was afraid to try to arouse the monster by throwing stones at it for fear it should destroy the boat, why was he not afraid to dive in? Moreover the way they got rid of the children—who might have seen too much and spilled the beans if questioned—seems very suspicious, especially as the children were hardened globe-trotters.

My scepticism seemed excessive to many at the time, especially as there was supposed to be a film of the monster. When pressed for my opinion on its identity I said in a magazine article and in the French edition of this book, that *if* it wasn't a hoax, it seemed most likely to be a some kind of gigantic eel-like selachian.

When the film did not arrive in Europe my suspicions increased. Then I heard from correspondents in New Caledonia, who had seen it, that the underwater shots were so fuzzy and vague that one could see nothing at all.

Finally I learnt that Robert Le Serrec, who in 1959 had tried to tempt some young men to come with him, and pay a handsome 'share of his expenses', had promised that the expedition would be financially fruitful. 'Besides,' he said one day, 'I have another thing in reserve which will bring in a lot of money ... it's to do with the sea-serpent.'

Thus his coup may not have been unpremeditated. Meanwhile he was sought by Interpol because he had sailed away from France even though his yacht had been 'attached' because his supplies were not paid for, and incidentally without companions—but with their 'share of his expenses'. And when he returned to France he was sentenced at Lorient to six months' imprisonment on 3 February 1966.

This has not stopped his photograph from continuing to appear in the press. *Paris-Match* splashed it in colour on 6 November 1966, calling the Le Serrecs 'Bretons who inspire confidence' and claiming that the scientists 'agreed in saying "We believe in it".' In fact the scientists in question, Professor Paul Budker and Ivan Sanderson, had considerable doubts. *Paris-Match* did not publish any proper retraction, and it was left to its rival, *Minute*, to explode the canard. It is a pity that the most doubtful sea-serpents should be those most widely publicized in the press.

Our next witnesses are two Britons who inspire more confidence. Captain John Ridgway and Sergeant Chay Blyth rowed right across the Atlantic in the summer of 1966 in *English Rose III.* They brought back no sensational photographs, but every line of their book, *A Fighting Chance,* rings true, and in mid-ocean one of them had a glimpse of a 'monster'. A rowing-boat, like the *Kon-Tiki* raft or Dr Bombard's rubber dinghy, provides the best means of seeing shy sea-animals.

On 25 July, a little before midnight on a calm night, Captain Ridgway was rowing while Blyth slept:

> I was lulled by the unending monotony. It was an idyllic night.
>
> I was shocked to full wakefulness by a swishing noise to starboard. I looked out into the water and suddenly saw the writhing, twisting shape of a great creature. It was outlined by the phosphorescence in the sea as if a string of neon lights were hanging from it.
>
> It was an enormous size, some thirty-five or more feet long, and it came towards me quite fast. I must have watched it for some ten seconds. It headed straight at me and disappeared right beneath me.
>
> I stopped rowing. I was frozen with terror at this apparition. I forced myself to turn my head to look over the port side. I saw nothing, but after a brief pause I heard a most tremendous splash.
>
> I thought that this might be the head of the monster crashing into the sea after coming up for a brief look at us. I did not see the surfacing—just heard it.
>
> I am not an imaginative man, and I searched for a rational explanation for this incredible occurrence in the night as I picked up the oars and started rowing again. Chay and I had seen whales and sharks, dolphins and porpoises, flying fish—all sorts of sea creatures but this monster in the night was none of these. I reluctantly had to believe that there was only one thing it could have been—a sea serpent.

There were further sightings in 1966 off the coast of England itself. In mid-October Mr George Ashton, 'a 49-year-old shot-blaster at a Sheffield casting works' was on holiday in his caravan at Chapel St Leonards near Skegness. He was strolling near the beach with his wife May, when they saw 'something like the Loch Ness monster' less than 100 yards offshore.

> It had a head like a serpent and six or seven pointed humps trailing behind [Mr Ashton reported]. At first I thought it was a log but it was travelling at about 8 m.p.h. and going parallel with the shore. We watched it for some time coming from the direction of Chapel Point until it disappeared out of sight towards Ingoldmells.
>
> I just didn't believe in these things and tried to convince myself it was a flight of birds just above the water. I even thought of a miniature submarine but after watching it for some time I knew it couldn't be.
>
> There was no noise. It just skimmed through the water.

Further along the beach was another middle-aged couple who seemed to have seen it, but they disappeared into the caravan site before Mr Ashton could reach them. He wrote to the press in the hopes of finding them and having his story corroborated. He had no luck. But Mr John Hayes of Skegness told the *Skegness Standard* that at the beginning of the season on a clear moonlit night he was cycling in front of the Derbyshire Miners' Centre at Winthorpe, when he heard a 'loud crack' out at sea.

> He looked towards the sea and saw a 'huge dark shape' about 500 yards out, moving at about 20 m.p.h. and leaving a wake behind it.
>
> He did not report the sighting at the time as he thought it might be a whale or some other identifiable creature. The 'Standard' report last week prompted him to reveal his information however.
>
> 'I still believe there are things which have yet to be discovered,' says Mr Hayes.

And there, whatever Mr Hayes's animal may have been, we can well say, 'Amen'.

14

Disentangled and Classified at Last

. . . it next will be right
To describe each particular batch:
Distinguishing those that have feathers, and bite,
From those that have whiskers, and scratch.

LEWIS CARROLL, *The Hunting of the Snark*

WELL, there you are! You have now seen the whole of the sea-serpent's dossier, and know more about the subject than anyone has done before; for, apart from Pontoppidan and Oudemans, all the writers who have tackled the subject have done so most incompletely, either because of lack of information, or because of preconceived ideas which made them include only those items which supported their own theory.

Much water has passed under the bridge since the heroic days of Pontoppidan—and many sea-serpents have passed through that water—so that after two centuries his documentation has been left a long way behind. Even Oudemans's monumental work is more than seventy years out of date, and despite the immense amount it contains I have been able to add to its records for the period before 1892. It was high time to tackle the problem afresh.

I have been obliged to make this book as exhaustive as possible, for two separate reasons. Firstly I wanted to be able to base my conclusions on the greatest possible number of sightings. Sir Arthur Conan Doyle has shown how the human mind is disposed to believe in something in proportion to the number of witnesses:

> If, for example, an okapi had only once been shot in Africa, its existence on the evidence of a single sportsman might reasonably be doubted. If ten men agree that they had shot such a creature, the evidence would be strong. If fifty had done so, it would become convincing.

I have collected here more than ten times that number of reports of the sea-serpent, sighted by single observers or more usually by groups of people, occasionally including as many as a hundred. On the other hand I must admit that all these reports refer to ten times as many different species. All the same, on Sir Arthur's basis, my evidence must at least be 'convincing'.

I have also tried to be exhaustive in order to avoid any prejudice. One can only be objective by publishing indiscriminately and impartially all the evidence that can be collected, so that everything relevant is presented to the reader.

'*De omni re scibili* (all things that can be known)' was Pico de Mirandola's way of describing his interests—to which Voltaire added '*et quibusdam aliis* (and some others)'. It is much the same here. I have dealt not only with the sea-serpent but 'some other' sea-monsters as well—indeed *all* the large unknown sea-animals. This is because people always thought they were sea-serpents—though they clearly were not true serpents—partly, of course because they seemed serpentine, but also because unconsciously the unknown is felt to be evil, and the serpent is the personification of Evil.

How serpentine were they really? Sometimes they were so in general shape, very elongated like serpents, but also like many worms, such molluscs as the giant squid, such fish as the oarfish, eels and Frilled Shark, such amphibians as *Dolichosoma*, such reptiles as the mosasaur, elasmosaur and sea-crocodiles, and such mammals as the otter and zeuglodon. Sometimes the resemblance to a serpent was confined to the head and neck, the rest of the body being submerged, and in this sense turtles, plesiosaurs, such birds as the swan and the anhinga, and even the giraffe are like serpents. Sometimes the resemblance is only in the tail, as in some rays. Finally in many cases the resemblance to a serpent consists only in an undulatory movement, or an illusion of undulatory movement produced by a row of humps, most witnesses being unaware that true serpents cannot undulate vertically.

If very large sea-animals are always elongated in proportion to their size it follows that they must all be serpentiform, if only partially. There must always have been a temptation to consider them as monstrous serpents whenever they could not be recognized. For this reason, this book, though it seems at first to concern only one animal, is really the sea sequel to *On the Track of Unknown Animals.*

If the reader recalls that in that book I did my best to establish on as solid evidence as possible the existence of some thirty species of large land animals not yet officially accepted by science, he may be readier to accept my claim here to have established the existence of less than ten large unknown sea-animals in the almost unexplored vastness of the ocean. Indeed the judicious reader may say that my conclusions are too timid and cautious.

I cannot claim to have entirely solved the problem of the great sea-serpent, but I have cleared up a good deal of it. To solve the whole complex problem, without being able to examine the remains of the animals in question, we need many more new detailed and exact reports. I am well aware that I must have missed many in the past. To attempt to be complete in a matter that covers all time and the whole globe is a vain hope. Many readers will surely write to tell me of reports that I have failed to find; and I earnestly beg them to do so, for as in a statistical science the results depend on the number of samples, so in cryptozoology the greater the number of reports the better the picture that one can draw of an unknown animal. For this is the main object of this book, and one that I am now about to undertake.

To begin with we have 587 real, apparent or pretended sightings of great unknown sea-animals, serpentine in some respect.

To analyse this information, and then put together the results, is a mechanical task, one which can be tackled by a computer. And the rest of this analysis will be almost as dry and mathematical as the operations of one of those machines. The reader who is interested only in the story I have had to tell, and who is prepared to trust my analysis—what Holmes called 'my methods'—may well skip to my conclusions on page 546.

We must now put on punch cards *all* the details which may throw light on the animals seen in the most systematic and codified way, so that they may be sorted mechanically. In each case we must specify the exact place of sighting, the time of year and the number of specimens seen together. Then for each specimen we must enter the apparent general shape—which is not always serpentine as one might expect, but also like a worm, caterpillar or eel, turtle or crocodile, seal or dog, or even a bird. Then follows the length, whether all or part of the animal was seen, measured by actual comparison or rough estimate, and the relative lengths of part of the body. And then the details of those parts.

The size, proportions and shape of the head, and any known animal with which it was compared must be entered. And there are certain important details: how high was it held above the water, and what angle, if any, did it make with the neck and the rest of the body? Could the eyes be discerned? If so, how big were they, what was their shape and colour and where were they situated? The same questions apply to the nostrils or vent and to the mouth. Did it reach back beyond the eye or not? Was it open? If so could teeth be seen, and what sort of teeth? Was the tongue visible? On the head were there ears, horns, antennae or some other appendage: a crest, a moustache, a beard or a goitre?

Then the neck: the shape, position (inclination to the water, curve and flexibility) and shape must be noted. We can conveniently call the neck *short* if its length is less than its diameter, *medium* if it is two or three times its diameter, *long* if it is four times as long, and *very long* if it is five times as long or more. Are there gill-slits on the neck, a long floating mane or a short stiff one, a jagged crest or a collar?

What is the body like? How big? What proportions and what shape? Is the spine ridged, with a continuous fin, a crest, with one or more ailerons, or with humps, and how many? What seems to be the consistency of these appendages?

Can limbs be seen? Are there one or two pairs—or even more? Are they jointed, can toes be seen at the end, and are they webbed, clawed or both? Or are they entirely transformed into flippers?

This anatomical questionnaire ends with the tail, if there is one, with details of its size and shape. Is it tapering, with a blunt or a pointed end, or flattened, forked, bilobate or even with more than two lobes? And, if it is flattened or extended, is this horizontal or vertical?

Then comes the appearance of the skin. Is it smooth, rough or wrinkled, with sparse hairs or close fur, a carapace, dermic plaques or scales? And if the latter what are they like, how big, and how arranged? What colour is it? And is it uniform or spotted, blotched or striped? Is it the same above and below the body?

We now have physiological features. What is the method of propulsion, in a straight line due to limbs alone, or by undulations, and are these horizontal or vertical—or in both planes? Does the head move from side to side or back and forth? What is the speed of the animal? Here we can conveniently call less than 6 knots *slow*, 7 to 12 knots *medium*, and more than 13 knots *fast*.

And there are other physiological details sometimes mentioned. Has the animal a visible breath like the big cetaceans', and can the sound of its breathing be heard? Does it give a cry? Or have a special smell? Does it seem to attack and feed on particular prey?

Finally there is its behaviour which may reveal its psychology (does it make off, showing itself timid or shy, or approach due to aggressiveness or curiosity?) or of its pathological condition (disordered contortions, spasmodic movements, vomiting, etc.).

When this is all on the cards we can begin by eliminating the hoaxes, which, as I have said, can usually be recognized at once, but now give themselves away more subtly, since when our data is put together like this, some of it shows itself to be too far from the norm (outside Gauss's curve, established statistically), or there are incongruous associations of features not found together elsewhere. All the same we should note that some extravagance, especially in dimensions, may not mean that the report is a complete invention: it may just be due to the observer's inability to estimate size at sea or a very human tendency to exaggerate.

In this way 56 obvious and not so obvious hoaxes can be detected. As some include several sightings (one includes 6 and another 3), we can say that only 49 undoubted hoaxes have found their way into the dossier.

After the hoaxes we must try to eliminate the mistakes. I have counted 52. They include not only certain mistakes, where the animal mistaken for a sea-serpent can be clearly recognized, but also possible mistakes which, by interfering with positive data, may lead to false conclusions.

Similarly we must also treat with the same suspicion the group—which is also very large—of vague reports lacking in details: all those which merely tell of an encounter with 'a sea-serpent' or 'a sea-monster like a gigantic serpent'. At the most the size is sometimes mentioned. There are 121 of these. All the same there is little likelihood of these being hoaxes: a hoax is intended to fool people and must therefore be very detailed (indeed it is usually given away by excess of detail). No, these reports are probably made in good faith. If the accounts are not detailed this is sometimes because the people who made the sightings were not capable of observing and reporting what they saw, and sometimes simply because they have come to us at second or third hand. I am sure that the details of some that I have cited can be filled in, either because circumstantial accounts of them appear in publications to which I have not had access, or, in recent cases, because the witnesses themselves may be able to give me the information I need.

There are certainly a number of mistakes among these 121 vague reports which cannot be referred to definite types of unknown animals. They cannot add anything to what we know of these unknown animals taken separately nor to the great serpentiforms taken together, but as they do not contradict the data extracted from precise reports, they may shed some light, if only as confirmation, on the general geographic distribution of large unknown sea-animals, the best seasons for sighting them and their possible migrations.

In fact the whole of this business of classification is actually based on the 358 sightings which remain when the hoaxes, mistakes and vague reports have been eliminated. The descriptions of them always include several significant details. There are some which are detailed enough for one to draw a picture and some with a first-hand drawing of their own. When put together they reveal contradictory features, such as the presence or absence of a particular characteristic, as well as features which are always found together. Analysis of huge synoptic tables on which various characteristics are arranged in columns, or a punch-card classification, automatically produces several distinct types. There are nine of them, each defined by its own pattern of features.

When classifying animals according to their external appearance we must of course, remember that different individuals of the same species may differ greatly in their anatomy according to their age and sex. But here the many other common features, specially those of physiology, behaviour, geographical distribution and biotope may enable us to tell which of these may be due to metamorphoses in development or to sexual dimorphism.

How exactly does the separation of the different types work? When we have finished we can show that each type has what is called *determining characteristics*, that is to say, features of its own that are enough to identify it at once: these characteristics may be positive or negative according to whether a feature is present or absent. The other characteristics which two or more types have in common are here (but only here) considered as *accessory*. We shall find, however, that two or more accessory characteristics may become determining when they are found together and then form a *composite determining characteristic*.

It is by finding these *simple* or *composite* determining characteristics that one can differentiate nine types of large unknown sea-animals that have been or could be described as sea-serpents. This task can be done mechanically with punch-cards. Simple determining characteristics appear whenever almost all those cards with one particular feature are found to have some features in common and no contradictory ones (the few exceptions must be considered as suspect). Composite determining characteristics appear whenever a similar result is obtained by picking out all those with two particular features simultaneously. One can, of course, proceed to look for composite determining characteristics consisting of three separate features, but the number of possible combinations is much larger, and in practice an electronic computer is needed. In any case simple and double determining characteristics were adequate to separate the nine types quite clearly.

The remarkable thing when one undertakes this kind of task is to find that the results include a number of surprises and sometimes contradict what one had expected to find, even after careful study of the dossier. But, of course, one cannot keep all the aspects of such a problem in mind and in proper proportion. For instance I was much surprised to find, after this sorting operation—which was thus shown to be objective—that the long-necked and the maned type could not be different forms of the same species due to sexual dimorphism or changes with age, any more than the many-humped sea-serpent, chiefly seen in New England, could be the same as the Norwegian super-otter. On the other hand the animal which appears on the surface as a row of triangular fins was the same as the dragon of Along Bay.

I can now give each of the nine types a convenient informal name and list its determining characteristics. None of these refer to its geographic distribution, although some will be found to have been seen only in limited oceanic zones. This may sometimes be a help in doubtful cases in recognizing animals poorly observed or described, but it has no value as a criterion, for, except when we have a very large number of sightings, it is most rash to say that an animal is confined strictly to a well-defined area. And in the sea it is quite normal to find odd specimens of known animals that have strayed a long way from their usual area of distribution.

Here then are the results of my analysis of 358 sightings of sea-serpents that are worth considering and contain significant details. The types are ranged in the order of the number of sighting which *clearly* refer to them.

LONG-NECKED (*48 sightings*)
Neck long or very long, at an angle to the head.
A big median hump on the back, making it look like two or three humps close together.
No tail, or a mere stump of a tail.
Two horns on the head (not always present).
Mottled colour + long neck.
Fast speed (more than 13 knots).

MERHORSE (*37 sightings*)
Long floating mane.
Slender medium-length or long neck + only one dorsal curve.
Very big eyes.
Long hairs or whiskers on the face.

MANY-HUMPED (*33 sightings*)
String of dorsal humps of virtually equal size.
Slender medium-length neck + one dorsal fin (not always present).
Small but prominent eyes + ovoid head with large muzzle.
Clearly contrasted colours (almost black above and white below).
White stripes on the sides of the neck.
Bilobate tail + narrow medium-length neck.

MANY-FINNED (*20 sightings*)
Several triangular fins looking like a huge crest.
Short slender neck + visible breath.
Small prominent eyes + round head.
Jagged crest on spine + short neck.
Mottled colour + short neck.

SUPER-OTTER (*13 sightings*)
Slender medium-length neck + long tapering tail.
Several vertical bends in the body (three to six, plus the wake)
Uniform light colour (grey or beige).

SUPER-EEL (*12 sightings*)
Long neck (really the serpentine body) forming an extension of the head.

Long tapering tail + long neck.
Big conspicuous eyes + long neck.
Leaps out of the water and falls back with a splash.

MARINE SAURIAN (*4 sightings*)
General appearance of a crocodile + oceanic habitat.

FATHER-OF-ALL-THE-TURTLES (*4 sightings*)
General appearance of a turtle + huge size.

YELLOW-BELLY (*3 sightings*)
Yellow colour + black stripes (one longitudinal along spine, others transverse on sides).

It is not surprising that the types based on a few not very detailed sightings have very few determining characteristics. It follows that the least well-defined types may include several different species, not necessarily related to one another.

So far we have accounted for only those sightings which clearly refer to the nine different types, 174 altogether or less than half of all those we have been considering. The others are partial, vague or incompetent descriptions, which are too ambiguous to be classified. There are many causes of confusion, the chief of which are as follows.

The appearance of a string of buoys may be due to:

1. Vertical bends in a very long animal.
2. Vertical bends in a long animal happening to swim on its side.
3. A row of solid humps or air-filled sacs along the back.
4. Transverse folds in a very fat body.
5. Turbulence waves in such a body.

The 'periscope' appearance may be due to:

1. A very long neck rising from a substantial body.
2. A serpentine body rising at an angle.

The appearance of a horizontal forked tail may be due to:

1. A tail of this kind, usual among cetaceans.
2. Two webbed hind feet, spread horizontally.

The appearance of a vertical forked tail may be due to:

1. A tail of this kind, usual among fish.
2. Two webbed hind feet, held together, vertically.

Mention of a horse's mane may mean:

1. A long floating mane, like that on most tame horses.

2. A short stiff crest, like the clipped mane of a racehorse or the natural mane of a true wild horse (Przewalski's horse).

Mention of big eyes may mean:

1. Really big eyes like those of many nocturnal animals (e.g. the giant squid among sea-animals).
2. Small eyes set in prominent sockets (like a hippopotamus's or crocodile's).

Description of a dorsal aileron may imply:

1. A true dorsal fin.
2. A hind or fore flipper appearing as the animal rolls.
3. A lobe of a vertical forked tail.
4. A lobe of a horizontal forked tail, appearing as the animal rolls.

The appearance of smooth skin may be due to:

1. Smooth bare skin.
2. Short stiff fur that is wet.

The appearance of rough skin may be due to:

1. Skin that is really wrinkled or bumpy.
2. Smooth skin covered with parasites.

The appearance of scaly skin may be due to:

1. True scales.
2. Bony dermic plaques beneath the skin.
3. A reticulated pattern on the fur or skin.

The colour may vary according to:

1. Geographic race.
2. The colour of sea and sky.

In many cases these causes of confusion do not apply because we already have at least one determining characteristic. Accessory characteristics may also help in doubtful cases. The place seen may swing the balance in favour of one type frequently seen locally, rather than another which is a total stranger there. Sometimes the animal's behaviour may enable one to settle the question with some degree of certainty. So that as well as the cases which *clearly* belong to a certain type, there are also the *probable* ones.

All the same there are still a number of quite ambiguous cases, especially those which look like a periscope. For it is very difficult, if the periscope has no angle in it, to tell whether what was seen was the first part of an eel-like fish or a long-necked mammal with its head in line with its neck. These I have classified as 'ambiguous periscopes'.

Finally there remain a very small number of incomprehensible or very doubtful cases where it is impossible to tell whether they are hoaxes, mistakes or rare if not unique sightings of an animal not in my nine categories.

Here then is a summary of the classification of all the sightings listed in the Chronological Table on pages 575–85 (where the individual classifications will be found).[1]

FINAL ANALYSIS			*Abbreviations*
121	Vague and therefore doubtful reports	121	?
56	False reports arising from 49 hoaxes	56	HOAX
52	Certain or probable mistakes	52	
82	Long-necked (48 certain + 34 probable)	82	LN
71	Merhorses (37 certain + 34 probable)	71	ME
59	Many-humped (33 certain + 26 probable)	59	MH
41	Ambiguous periscopes	41	?LN ?SE
28	Super-otters (13 certain + 15 probable)	28	SO
26	Many-finned (20 certain + 6 probable)	26	MF
23	Super-eels (12 certain + 11 probable)	23	SE
9	Marine saurians (4 certain + 5 probable)	9	MS
6	Yellow-bellies (3 certain + 3 probable)	6	YB
4	Fathers-of-all-the-turtles (4 probable)	4	FT
9	Incomprehensible, unclassifiable or very suspect reports	9	??
	TOTAL	587	

It now remains to describe as carefully as possible the various types of unknown sea-animals which have been brought to light by this statistical analysis. This time I shall give *all* the information we have been able to gather about them, not merely their determining characterstics. The greater the number of witnesses of each feature, the greater its probability.

THE SUPER-OTTER

Anatomy: A sea-animal of considerable size, comparable with that of the biggest cetaceans, but in general shape more like an otter, not, of course, that this implies any close zoological relationship.

The head is flat on top, but rather elongated as a whole, tapering towards the snout: it sometimes recalls a seal's or sea-lion's. The eyes are small and almost impossible to discern, but the teeth are sometimes seen, as the animal often opens its mouth.

The neck is slender but of medium length, but the tail is very long and ends in a point. The whole animal is very elongated. Its spinal column must be

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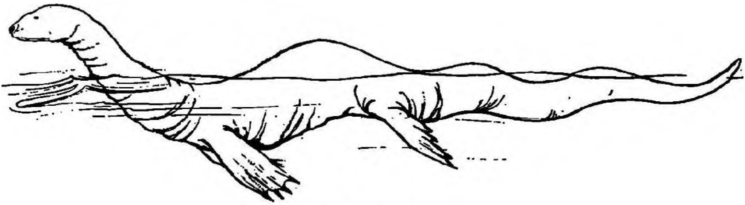
[1] Where there are alternatives in the Chronological Table (e.g. ?MH ?LN) only the first alternative—the most likely—is included in the numbers in this analysis).



129. Super-otter

exceptionally flexible, for, when it moves on the surface in fairly close vertical undulations, as many as six or seven bends—including the head—may be seen above water. Some witnesses speak of even more bends (ten, twenty-five or even seventy in one case) but they must also have counted the waves in the water left in its wake, for they also exaggerated the length out of all probability (200 to 300 feet, 650 feet and even 1,300 feet!)

Two pairs of webbed feet with distinct toes are sometimes seen as the animals leaps or rolls.

There is no appendage on the back: no crest, fins or humps.

The skin looks rough or wrinkled, so that to some it looked as if it were a carapace: but one witness who saw it very close described it as 'woolly'. It must therefore be like that of the walrus or sea-elephant. It is also, as in these pinnipeds, a fairly light and even greyish brown.

The size of the animal seems to range between 65 and 100 feet, but, because it makes a wake that is difficult to tell from the waves in its own body, its length is often wildly exaggerated.

Behaviour and Habitat: The animal's breath has only once been seen, by Hans Egede, the only sighting in a really cold area. The breath was emitted not from a vent in the top of the head, but from two nostrils at the top of the nose and was no doubt visible because of condensation as it came in contact with very cold air. (The breath of cetaceans which 'blow' is visible in all latitudes; this is probably both as a result of sudden decompression and because it contains droplets of oil.)

From its anatomy its method of swimming must be very like an otter's. Extremely flexible and with no stabilizing ridges, it must likewise move by undulating the body in a motion the principal component of which is vertical, but sometimes also spiral.

As it is a quadruped, not much modified for aquatic life, it must be an animal that lives near the shore in the upper layers of water, that is, within the continental shelf. Its uniform and fairly light colour indicates a pelagic life.

Geographic Distribution: The super-otter is the most northerly of all the great serpentiforms and is generally seen all along the Norwegian coast from North

Cape to Nordfjord, once exceptionally in Oslo fjord, once probably in the Baltic, and also once near Greenland. All the sightings, without exception, occurred in the middle of the summer.

It is thus an animal which is only seen on the surface of northern waters between the +5° C. (41° F.) and −5° C. (23° F.) isothermic lines at the very time when the temperature there is highest.

It could therefore well be an animal that normally lived in icy waters, which its large size would certainly allow it to do, and ventured into less cold waters only in summer, either to mate, or more likely to give birth, the warmer water being needed for the newborn young, which, being smaller, would be less well armed against the cold. Two specimens have three times been seen together in Norwegian waters in summer, and there is a report of three together, but the season is not specified.

These summer migrations, connected with reproduction and thus like those of the rorquals, provide the best opportunities of seeing Super-otters. The total absence of sightings in what must be their normal habitat is easily explained by the lack of shipping in the zone of floating ice.

That a quadruped, less highly adapted to life in the sea than whales and even pinnipeds, should be confined to very cold waters is quite logical. Melting ice makes polar waters the least salty in the world and thus nearest to fresh water and most oxygenated. They are the sea-water to which a land-animal can most easily adapt itself, and it is not surprising that they harbour the least specialized, the least modified of all sea-mammals, the Polar Bear.

As there has not been a single certain sighting of the Super-otter since 1848, it may well now be extinct.

THE MANY-HUMPED

Anatomy: An elongated sea-animal of very great size, easily recognizable by the row of many humps regularly placed all along its spine.

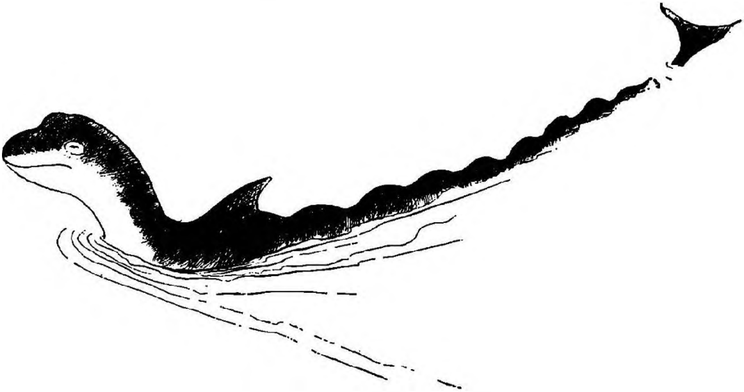
The head is ovoid, flat on top and blunt, extending into a broad snout which makes it look like an ox's.

The neck is slender but of medium length. The shoulders sometimes bear a small triangular fin, which may well be a feature of the male (or appear only with age, for it is generally associated with the biggest specimens). In all of them the back bears a longitudinal series of humps forming a ridge like that of the Sperm-whale, but much more conspicuous.

The tail spreads and is bilobate like that of the cetaceans. One of the lobes sometimes appears at the surface, making it look as if it is vertical like a fish's; but it must be horizontal since the animal certainly undulates vertically.

The upper part of the single pair of flippers is sometimes seen when it raises its neck, leaps or rolls.

The skin is generally described as smooth, but some say it looks rough,



130. Many-humped sea-serpent

which may be due to parasites (barnacles, sea-lice, etc.), as on the Humpback Whale. Scales are sometimes even mentioned: they could perhaps be —though only on the body—bony dermic plaques as there were on the Archaeoceti.

The colours of the top and bottom of the body are in strong contrast, which some sea-animals find useful camouflage, especially those which stick mainly to the continental shelf. Here the head and back are dark brown to black (chocolate without a drop of milk), while the throat and belly are pure white. There are also one or two white stripes on the sides of the neck.

The length generally varies between 60 and 100 feet, and may reach 115 feet in rare cases, as in the Blue Whale.

Behaviour and Habitat: There is no visible breath.

The vertical undulation of the hump-covered body produces an effect like a caterpillar's motion, which looks most puzzling and is largely responsible for the name sea-serpent—unjustifiable though it is.

Its surface speed is considerable: it may easily reach 22 to 35 knots, and even 40 knots, which is very remarkable for a beast of its size.

Ivan Sanderson has suggested in private correspondence that the humps may actually be hydrostatic organs, air-filled sacs connected to the larynx and inflatable at will. They would lie between the skin and the muscles, like the similar complex of sacs around the neck, chest and armpits of orang-utans and siamangs. The number of these sacs, the size of which would be limited for mechanical reasons, would increase with the size of the individual. This would explain the great difference of opinion of witnesses about their number and relative size.

As to their function, they would serve primarily as reserves of air for prolonged dives, and also to lighten the enormous mass of these animals. Their longitudinal arrangement would provide great stability.

This ingenious theory would explain much and is most attractive.

Geographic Distribution: The Many-humped is chiefly seen along the east coast of North America between Newfoundland and New York, with a marked predilection for Massachusetts Bay. It is thus met on the surface chiefly on the west of the North Atlantic between the +5° C. (41° F.) and +10° C. (50° F.) isotherms, but it has also been occasionally seen south of Iceland (+5° C. isotherm) and west of Scotland (+10° C. isotherm), where the Gulf Stream could have taken it. I am reluctant to include two other sightings which are all the more doubtful as they are on the high seas near the Tropic of Cancer (+20° C., 68° F., isotherm): one, which was vague and might refer to a long-necked sea-serpent, was in mid-Atlantic level with the Canaries where the end of the Gulf Stream ends; the other, which was more explicit, but of very doubtful authenticity, was right in the middle of the Gulf of Mexico, where another branch of the Gulf Stream ends. If the witnesses were telling the truth these could have been stray specimens that had drifted there.

Off New England almost all the sightings took place in summer, that is, in an area with an average temperature of more than +22° C. (72° F.). Further north, on both sides of the Atlantic, they are usually in spring, once at the beginning of autumn, and once—though the identity of this animal is doubtful—in the middle of the winter, *none in summer*. Further south the two suspect sightings took place at the end of winter and the beginning of spring and were thus also not in summer.

All that we can conclude, for lack of enough of sightings, is that the Many-humped lives in the coastal waters of the North Atlantic, where it seems to remain always in the relatively warm waters of the Gulf Stream. In summer, for some reason which is still obscure, it cruises in the cold temperate waters of New England before wandering further north or south following one branch or other of the Gulf Stream.

The scarcity of sightings since the beginning of the century shows that the species is obviously becoming much rarer.

THE MANY-FINNED

Anatomy: An elongated sea-animal of great size, particularly characterized by very peculiar lateral projections which look like a number of fins.

The head is round and like that of a walrus, seal or calf. The eyes are small but prominent and placed high on the head like a hippopotamus's. The mouth is ventral and so wide that it is sometimes compared to a turtle's. The nostrils are clearly visible on the front of the muzzle and are surrounded by hairs.

The neck is slender but rather short. The body is very elongated and has a slight saw-toothed crest along the spine.

The pectoral flippers are only rarely seen. The tail is flattened dorso-ventrally but only slightly spread. Probably it has three lobes, and looks like a shrimp's or a crayfish's.

The animal often shows above water a row of four to twelve triangular fins like that of a Blackfish (*Globicephalus*) but pointing in the opposite direction, i.e. forwards. This quite abnormal angle shows that they cannot be dorsal fins, for this would not agree with the laws of hydrodynamics. They are more likely to be lateral excrescences of the body, as certain Archaeoceti are believed to have had. This crest along the sides is almost essential for the stability of an animal without a large tail or much of a ridge along the back.

The skin is smooth and like tanned leather, but covered, or rather supported, in places by very large scales, probably huge bony dermic plaques, forming, on the dorsal surface at least of the animal, segmented and jointed armour like that of the armadillos, and is believed to have existed on some Archaeoceti. This sectional armour may make the animal look as if it has projecting ribs, and no doubt it also forms the saw-toothed crest along the spine.

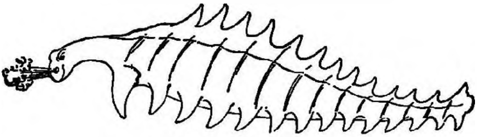
The colour of the skin is brown with dirty yellow patches, giving a general impression of greenish grey. This speckled colouring is very characteristic of littoral sea-animals.

According to the witnesses, the size varies between 30 feet and 100 feet at the very most. It is therefore probably not much more than 60 to 70 feet.

Behaviour and Habitat: The Many-finned moves in vertical undulations of its body, in which it is well served by its lateral fins. But this arrangement prevents it from using its flippers to turn, and it is obliged to roll right on its side to do so, thus showing its many fins above water.

When chased, the Many-finned may reach nearly 10 knots according to the unanimous evidence of expert witnesses.

The breath which blows out of its nostrils is almost always seen and is a characteristic feature of this particular sea-serpent. The armour implies that



131. Many-finned sea-serpent

the animal usually frequents shallow rocky or coralline waters. This is confirmed by its speckled colour, which agrees with this kind of habitat.

Geographical Distribution: The Many-finned is seen throughout the year, especially in tropical waters, both in the Atlantic and in the Indian Ocean and Western Pacific, but it also ventures into warm tropical waters. It thus frequents the hottest parts of the globe, where the average annual temperature is nearly +30 °C. (86° F.), without ever straying beyond the +15° C. (59° F) isothermic line.

Two individuals have twice been seen together, once in Along Bay in February and once near Cape Guardafui in Somalia in April, thus both times around the beginning of spring.

THE MERHORSE

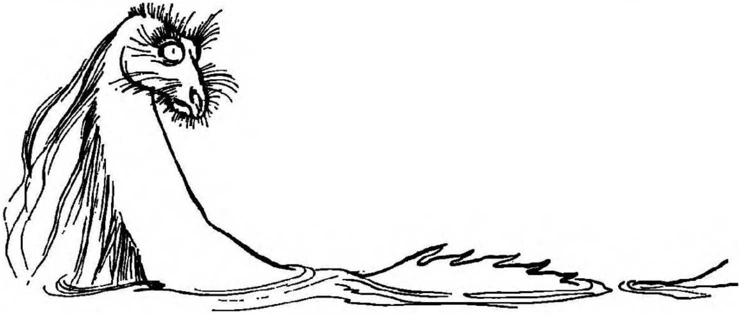
Anatomy: An elongated sea-animal of large size characterized by a sort of large mane hanging down its neck.

The head, somewhat tapering in profile, looks like a horse's or a camel's but it is also very wide, so that it looks diamond-shaped from in front and thus like a snake's.

The eyes are enormous, really huge, and point forward. Black in colour, they may look red or green according as the light strikes them, just like those of the Carnivores and particularly the pinnipeds. The mouth is very wide and seems to be edged with thick light-coloured lips. Whiskery hairs bristle on the face and may form a moustache.

The neck, medium to long, bears a long floating mane. On the back, more than one curve of which is never seen, there is sometimes a jagged crest, probably formed by tufts of hair sticking together.

The tail is described sometimes like a snake's and sometimes as jagged and flail-like. No doubt it is really a false tail formed by two webbed hind feet joined together in a vertical plane, one or all the toes of which are some-



132. Merhorse

times seen above water. Otherwise the feet are never seen, but from the animal's general anatomy, I am inclined to think there must be two pairs, unless the hind pair have disappeared and been replaced by a bilobate tail with a jagged rear edge one lobe of which is sometimes seen.

The skin looks smooth and very shiny: it is probably covered with short close fur, like that of the sea-lions.

The animal is uniformly dark brown or steel grey to black; sometimes looking bluish or greenish, no doubt due to reflections of the colour of the water. It is described as a less dark, more mahogany colour in warm and hot regions. The mane is always distinctly reddish.[1]

The length varies between 30 and 100 feet (Apart from one reference to 200 feet, it is only in the old Norwegian traditions that we hear of 1,300 to 1,800 feet). Probably it rarely exceeds 60 feet.

Behaviour and Habitat: The Merhorse moves by very marked vertical undulations which generally strike the observer.

The very large size of the eyes, reminiscent of those of the lemurs, or, in the sea, of the giant squid's, show that they have been developed to gather very weak light. This suggests that Merhorses habitually live in twilight—though not, of course, in total darkness, where even the biggest eyes would be useless. In daylight they would swim at 50 to 100 fathoms, just like giant squids, coming towards the surface as night falls. Their uniform dark colour agrees with such a pelagic medium-depth existence. Their appearance on the surface in broad day and bright sunshine must be fairly rare. It must be due to exceptional circumstances or the need to renew their air supplies. Their vertical undulations make it clear they are mammals.

It may seem surprising that there should be a semi-abyssal mammal living at a fairly considerable depth of up to 100 fathoms. But the Sperm-whale, which can dive to 500 fathoms and stay under for an hour and a quarter, must often cruise at such depths, and Merhorses could well be even better adapted to life at 50 to 100 fathoms. It is here that their mane, so very unusual in a sea-animal, may come in. It is noticeable that the better adapted an animal is to life in the sea, the more hairless it is; the cetaceans are smoother than the pinnipeds, and even in the Fur-seal the mane is very short. Ivan Sanderson has suggested to me that the mane of these sea-serpents might be respiratory organs in the form of filaments, similar to the 'hairs' of the Hairy Frog (*Trichobatrachus*), and supplementing their pulmonary respiration. And in the Merhorse, as in the Hairy Frog, these 'hairs' are reddish, which may perhaps be due to their structure and function. But, admittedly, this arrangement would be quite unique among mammals.

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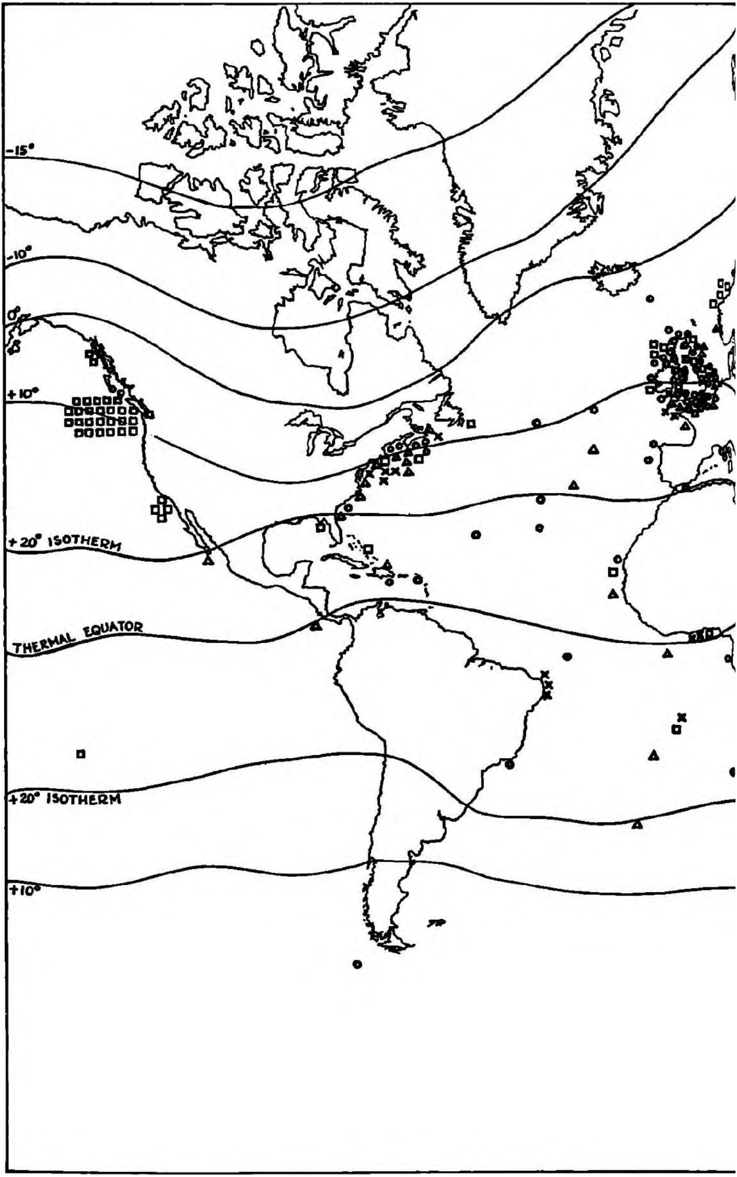
[1] Only in Lorenz von Ferry's doubtful case of 1746 is the mane described as white. But as there are many bends in the body—unlike the Merhorse—it is probably a Super-otter, the white mane being merely foam raised by the neck.


-15°
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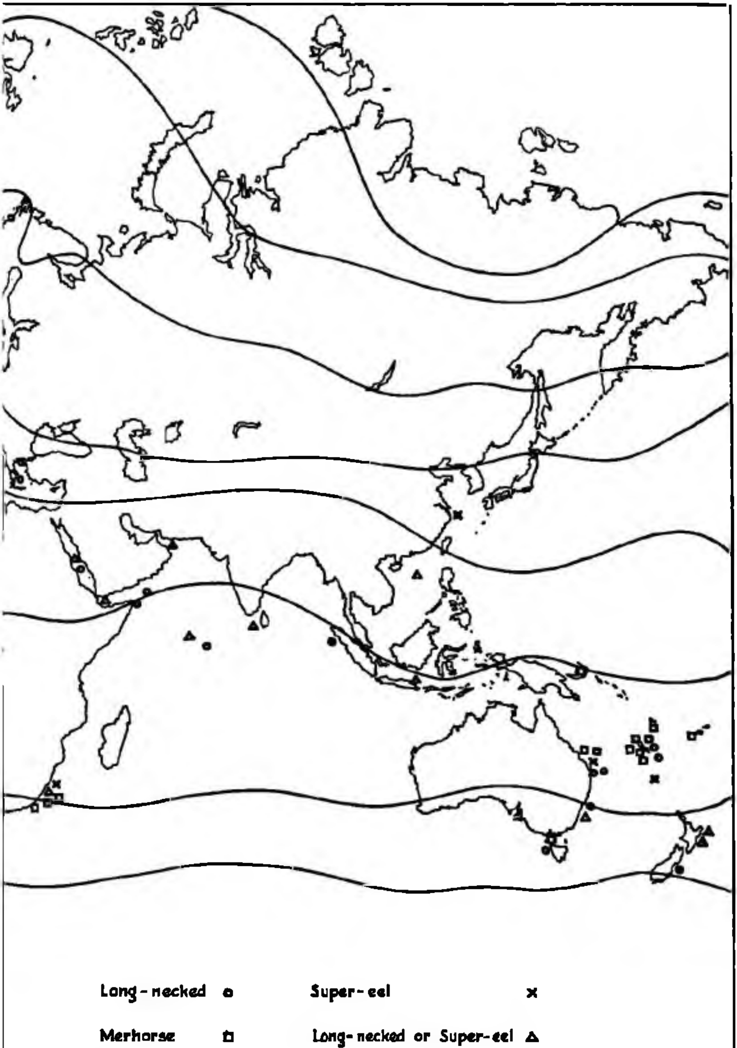

Long-necked ○
Super-eel ×
Merhorse □
Long-necked or Super-eel △

Map I
Sightings of world-ranging sea-serpents

Few witnesses have mentioned the Merhorse's speed, which is not surprising if these animals do not normally swim on the surface. All the same they must presumably be capable of considerable speed—which at least one report confirms—for their pelagic habits mean that they must be predatory animals which hunt moving prey. Not having a huge mouth like the whales, whale-sharks, basking sharks or manta rays they cannot live only on plankton: their usual prey must be pelagic fish and squids, which are very fast animals. Ivan Sanderson has sent me an interesting piece of information about the sea-serpents in the Arafura Sea which connects with the Coral Sea, where there are many sightings of Merhorses:

> Natives of the Arafura Sea, and notably in the Aru Islands call them the equivalent of '*Enemies of the Architeuthis*' and assert that if grabbed while feeding inside a reef by the long arms of a giant squid lying on the outside of the reef, they will just chop off said arms and eat them, or pull the cephalopod in over the reef by brute force.

This reputation of enmity may be formed on an accidental observation of a duel between a Merhorse and a giant squid which have come to the surface from the depths where they both normally live.

In 1923 such a fight was nearly seen in Nouméa Bay, when loud splashes were heard and fleeting glimpses could be caught of these two adversaries.

Geographical Distribution: The Merhorse is cosmopolitan, or nearly so: apart from in the Polar seas and the Indian Ocean it has been met almost everywhere. It is chiefly seen near the coast in temperate regions both in the north and in the south, and further to seaward, though still on the continental shelf in the warmer intermediate zone. It has hardly ever been seen in mid-ocean. No doubt it finds its food at a certain level of the sloping continental shelf, where there is a certain temperature and salinity. The higher the surface temperatures the deeper it must dive to find the same marine climate and the further it must go from the coast.

The first series of coastal sightings is in the cold temperate zones of the North Atlantic (near Massachusetts and Nova Scotia on one side, and near the British Isles and the Norwegian provinces of Romsdal and Tröndelag on the other) and in the cold temperate zone of the North Pacific (near British Columbia and south-east Alaska), i.e. between the +5° C. (41° F.) and +10° C. (50° F.) isotherms.

Another series of sightings a little further offshore is found around the +20° C. (68° F.) isotherms both in the North Atlantic (off Portugal and the Canaries, where the Gulf Stream fans out) and in the North Pacific (where they are more localized off Southern California).

In the Southern Hemisphere there are practically no sightings between the +5° C. and +10° C. isotherms, but this is no doubt because there is so little land in this zone. A series of sightings around the + 20° C. isotherm is found in the South Atlantic (off La Plata on one side and Cape Province on the other) and in the South Pacific (off Queensland, the Tuamotus, New Caledonia, New Hebrides and Fiji).

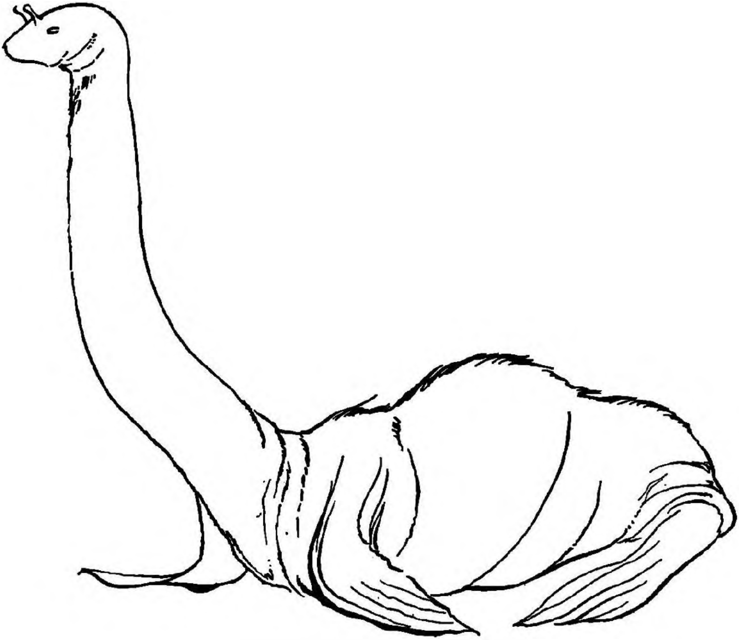
Some sightings off the west coast of Africa seem to show a migratory route between the northern and southern Atlantic areas. There may be a similar route in the Pacific between the Tuomotus and California, but there is no sighting to confirm it. Nor have any Merhorses been sighted in the Indian Ocean.

In this particular type we find a phenomenon of eurythermy, that is, a much more flexible adaptation to variations in temperature than in the other great serpentiforms. Thus in temperate regions the sightings are not confined to the summer, but spread all the year round, both in the Atlantic and the Pacific. In the North Pacific sightings even seem to be rarer in summer than in the rest of the year. It is clear that this pelagic animal of nocturnal and abyssal habits seeks the depth at which its preferred climate lies along the sloping continental shelf, according to seasonal variations in temperature. In hot regions, where it passes through extremes of temperature as it dives, its eurythermy is a vital necessity.

THE LONG-NECKED

Anatomy: A sea-animal of fairly large size, much bigger than the biggest pinnipeds and recognizable by its very long slender neck. Its general shape can vary greatly because of its thick layers of fat: sometimes cigar-shaped, sometimes serpentine when swimming fast, it may seem thick and stumpy when hunched up on itself. The relatively small head is round in shape with a somewhat tapering muzzle, sometimes like that of a seal or dog, sometimes like that of a horse, camel or giraffe. This apparent contradiction in testimony is doubtless due to the head lengthening with age, as is the rule among mammals.

The eyes are very small and can hardly be seen except from very close. In young ones there are a few whiskers on the muzzle. Two little horns can sometimes be seen on the head; these are probably erectile tubes arising round the nostrils. As the eyes are practically invisible, it is hard to place these tubes exactly in relation to them: at all events they rise from the top of the head. They would enable the animal to come to the surface to breathe without lifting its head out of the water, an arrangement like the skin-diver's schnorkel. Ivan Sanderson has suggested to me a second possible function for these tubes. Having noticed how a diver may be unsighted by air-bubbles streaming up in front of his mask, he thinks these tubes may also prevent the long-necked sea-serpent from obscuring its field of vision when it breathes out under water.



133. Long-necked sea-serpent

The neck is long and cylindrical; it is extremely flexible and can bend in any direction, especially in a vertical plane like a swan's. It may also stick perpendicularly out of the water like a telegraph pole. It has no mane, but a sort of collar, perhaps a fold in the skin, behind the head is sometimes mentioned.

The body is massive, thick and covered with rolls of fat so that it may, according as it bends, show one, two or three big dorsal humps, the middle of the three being the biggest. It has been suggested that these humps are inflatable air-sacs. This is possible, and the explanation cannot be excluded, but there is no need for any such theory in this case.

The spine forms a slight ridge all along its length, this may be due to a hairy crest or be accentuated by one.

There are four webbed feet, the front pair of which are often visible when the animal stands up vertically in the water, as the pinnipeds often do (see Plate 52). When the hind feet are spread out in the same plane, they may sometimes look like a horizontal bilobate tail, as in the cetaceans. But they can also be held face to face, as the pinnipeds often do, and may then look like a fish's tail (see Plate 49).

There does not seem to be much tail: at the most it is a mere stump.

The skin looks smooth when it is wet and shining, but seen from close to it looks wrinkled and rough, like a walrus's or an elephant's. It is very dark brown on top, with black, grey or whitish mottling, while the underneath of the belly is dirty yellow and much lighter.

Compared with the other great serpentiforms it is not very long. Apart from one or two extravagant estimates of 200 feet or so, almost all the witnesses give a length between 15 and 65 feet—60 feet often being given in round figures. There is, it is true, a series of witnesses who give lengths between 65 and 100 feet, and even as much as 120, but they seem to be influenced by the preconceived idea that it is a serpent, a plesiosaur, or even Oudemans's *Megophias*, and to assume it must have a tail as long as its neck and so extrapolate unjustifiably from the visible part of the body.

Behaviour and Habitat: The Long-necked is certainly the only sea-serpent that is amphibious. It is extremely flexible. The chief component of its movements is in the vertical plane; and this is mainly seen in its head swinging backwards and forwards when raised out of the water. This is also striking when the animal bounds on land, rhythmically gathering its hind legs up near its front ones and then leaping forward with the front ones, as the sea-lions do.

Observers are often struck by the animal's staggering speed, which is quite exceptional at sea. Prodigious speeds, like that of an express train are mentioned, but more trustworthy witnesses, with more knowledge of the sea, generally give speeds between 15 and 35 knots. Such speeds seem to imply that it is a predator feeding on very fast-swimming fish. To catch its prey, the long-necked sea-serpent must make use of its long flexible neck to dart its jaws suddenly well ahead of its body.

When the animal moves very fast turbulence waves appear on its very fat body as they sometimes do on the fatter pinnipeds, and this creates an illusion of small humps close together like those of the Many-humped.

No breath is ever visible. When the animal appears on the surface it sometimes leaves a greasy wake on the sea, as pinnipeds likewise do.

A careful study of this type of animal,[1] which is found in many steep-shored lakes in cold temperate regions in both Northern and Southern Hemispheres, shows that its sight is rather poor. In any case, considering the murkiness of the waters it sometimes frequents—for instance those of Loch Ness—it must hunt its prey chiefly by sonar, as all the pinnipeds seem to do.

Geographic Distribution: The Long-necked is completely cosmopolitan: apart

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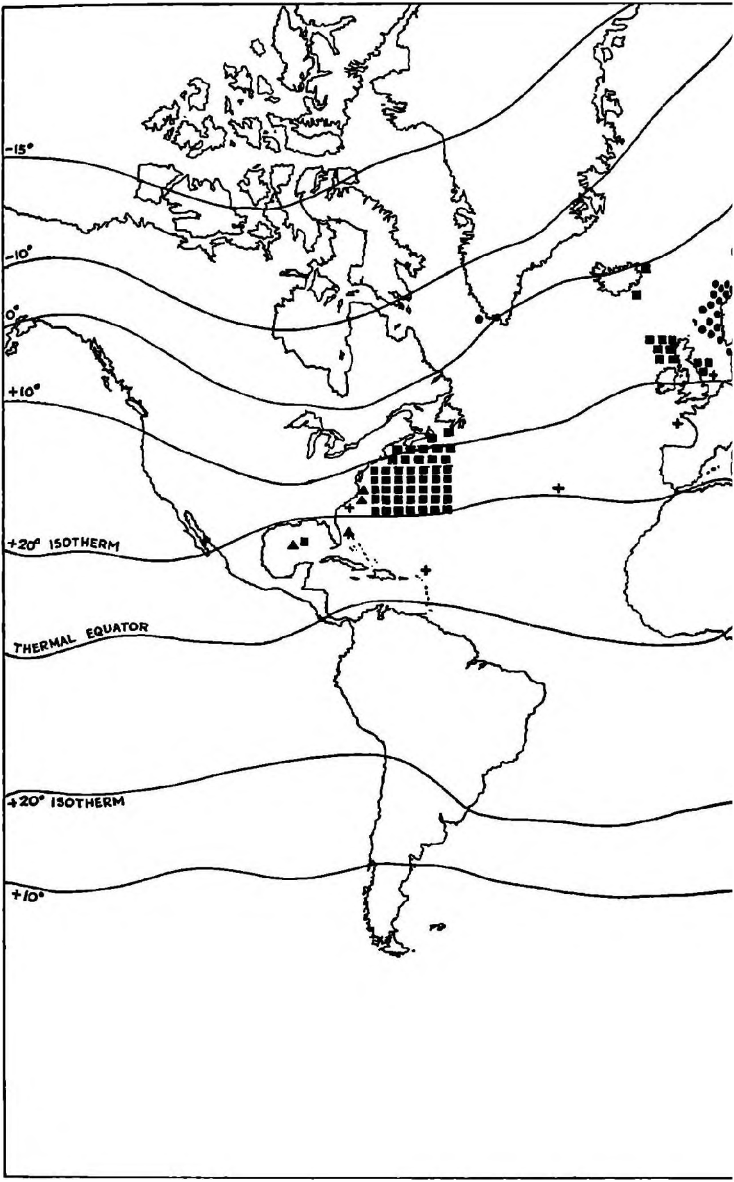
[1] Which will appear in a separate book on 'monsters' of lochs, lakes, marshes and rivers—freshwater unknown animals.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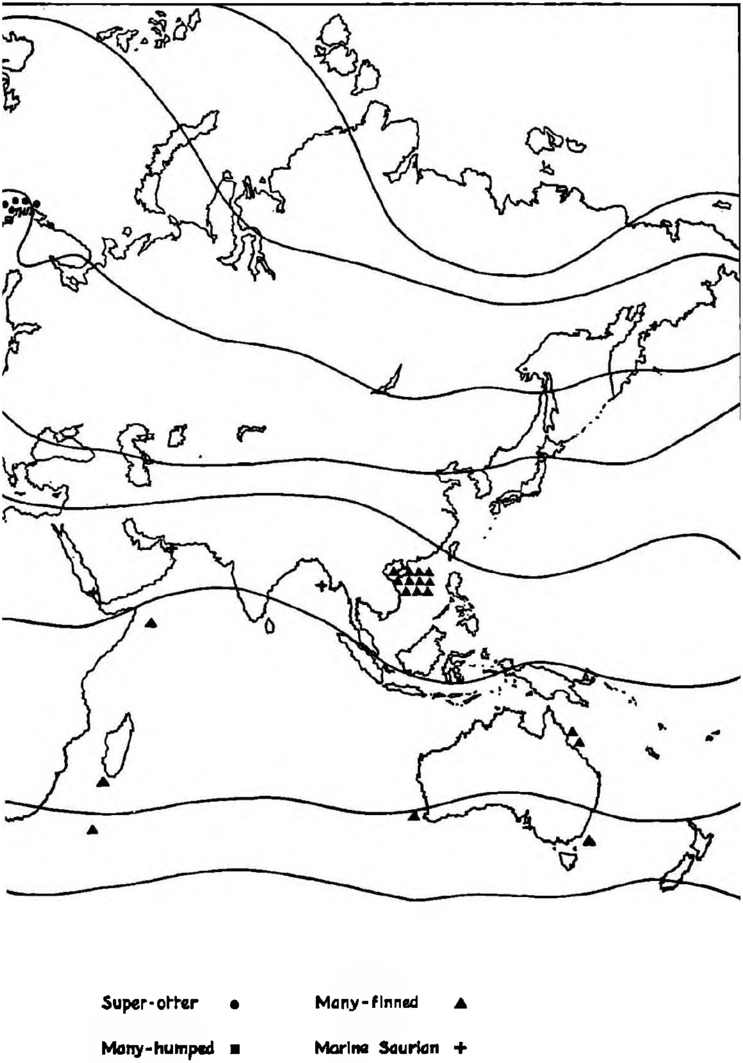
Super-otter ●
Many-finned ▲
Many-humped ■
Marine Saurian +

Map II

Sightings of sea-serpents with restricted areas of distribution

from in Polar waters it is found everywhere. In the cold temperate regions of the Northern and Southern Hemispheres (between 0° and +10° C.) almost all sightings are near the coast, while they are usually in mid-ocean in warm temperate zones. The Long-necked is the sea-serpent which is most often met on the high seas, far from the coasts. It is apparently a great migrator, and is helped in this by its remarkably high cruising speed.

Most sightings have been made round the British Isles, but this is doubtless because the coasts there and opposite them in France and the Netherlands are very highly populated. Many sightings have also been made on the other side of the North Atlantic off Newfoundland and Maine, and in the east of the North Pacific off British Columbia. In the Southern Hemisphere sightings are chiefly around the Tasman Sea, south-east of Australia, off New Caledonia, New Zealand and Tasmania. Those in the Indian Ocean are generally doubtful and most, though not all, could refer to Super-eels.

Almost all sightings in the temperate zones of the Northern Hemisphere have taken place between the end of April and October with a marked increase in August and two exceptions in December. In the tropics they occur all the year round, except in the spring months from March to May. Then in the temperate zones of the Southern Hemisphere they occur more or less in these very months from February to April.

If we may draw any conclusion from these sightings—and there are relatively few in the tropics and Southern Hemisphere—we may say that this type likes to spend the spring and the whole of the warm season in Northern cold temperate zones, but has a tendency to migrate to the tropics to spend the end of the summer and autumn there. It then makes for the temperate regions of the Southern Hemisphere to enjoy the end of the Southern summer. Thus it tends to seek a warm but not torrid climate.

The earliest certain sighting of a Long-necked dates from 1846, since when they have become more and more common, so that during the twentieth century they have been by far the most common type. We may therefore infer that they are a 'rising' species, which is multiplying and expanding, and it certainly looks like a recent species, in process of specialization, rather than an ancient one. It would not be surprising if its rise helped to exterminate the Super-otter, since both seemed to be fighting for the same ecological niche.

THE SUPER-EELS

Anatomy: It is impossible to give an exact description of the Super-eels that have been described as sea-serpents, for there are certainly several different species, perhaps even different genera belonging to unrelated groups.

The only common features of all the Super-eels are the apparently long neck (actually the cylindrical body) and the long tapering tail ending in a point. These animals are thus the only sea-serpents which are serpentine from one end to the other.

But they differ very much in appearance. Some have a rather blunt head like the common eel, others have a pointed head like the congers and morays. In some the mouth is terminal, in others ventral. Some are blackish brown or blue on top and white underneath like the common eel; others, confined to the Mediterranean, are more speckled, in a 'camouflage' style, others are reddish.

The eyes, of considerable size, are usually visible.

Witnesses often mention a continuous dorsal fin, soft in consistency and somewhat translucent, beginning suddenly at some distance from the head. Two pectoral fins are described in some cases, but more often they are not seen, either because they are held close to the body, or because there are none, as in the morays.

The size of animals of this type is not usually said to be large—usually it is less than 50 feet. Estimates of more than 100 feet are certainly due to false extrapolations. The curve of lengths given by the various witnesses has two peaks, one around 30 feet and the other at 100 feet. This seems to confirm that there are at least two types of very different sizes.

Behaviour and Habitat: Super-eels are sometimes seen coiled on the surface, as is the habit of large congers, or undulating rapidly, presumably on their sides, since they seem unable to undulate except in the horizontal (or frontal) plane of their body. Most often they are seen raising the front half of the body above the surface, as eels sometimes do, and especially surging above water in a flash and falling back with a great splash. In this case the mouth keeps opening and closing spasmodically.

Finally Super-eels have occasionally been seen on the surface fighting with a sperm-whale or other whale, which they have coiled round as if to strangle it, and are beating it with their tail.

Thus these animals seem to live normally in the depths where the temperature is very low. They are seen on the surface only in exceptional circumstances, apparently writhing in their death-throes. This may be caused by progressive suffocation as they accidentally wander into warmer waters, which would also explain their opening and shutting their mouths convulsively, vainly trying to get more oxygen.

Geographic Distribution: This type is obviously very varied, but seems as a whole to be cosmopolitan and abyssal. If it appears all over the world at any season it evidently does so by accident.

It is true that in temperate zones animals of this type are seen a little more often in summer, but this may well be due to the migrations of summer visitors to the seaside rather than of the animals themselves.

All the same we should note that the mottled type seems confined to the Mediterranean.

THE MARINE SAURIAN

Anatomy: A sea-animal shaped like a lizard or crocodile, but much bigger than the biggest specimens of sea crocodile (*Crocodylus porosus*).

The head is very long and looks like a crocodile's, with its prominent eye-sockets, long mouth and many closely-set teeth. It has two pairs of flippers or feet with separate but webbed toes, and a long powerful tail. The skin generally looks smooth, but scales remain in places and form rings round the body and a slight dorsal crest.

The colour is greyish or reddish brown. The length may reach 60 feet, and is in any case not far short of 50.

Behaviour and Habitat: The Marine Saurian's movements are all in a horizontal plane. It seems capable of considerable speed.

It is sometimes met near the coast, but at least as often in the ocean: it is clearly a pelagic animal, much better adapted to life in the sea—and it lives there exclusively—than the South-East Asian Double-Crested Crocodile.

Geographic Distribution: This fairly rare type has been seen only in tropical waters, in the Atlantic as well as the Indian Ocean and the Pacific, or in high summer in the warm temperate regions of the North Atlantic (below the +10° C. isotherm), that is in places where the temperature is more than 20° C. (68° F.).

It is therefore clearly an animal that likes the heat. Incidentally ordinary crocodiles do not live in waters below 20° C. (68° F.).

THE FATHER-OF-ALL-THE-TURTLES

Anatomy: This very rare type is described as a gigantic turtle and is sometimes given very specifically turtle-like features, such as a very wide mouth which splits the head in two when it opens, big prominent eyes, and very large scales on the back. All the same one cannot help wondering whether the witnesses have compared the animals they have seen to turtles because of their general shape, which is also that of the Long-necked and the Merhorse (a medium to long neck, followed by a round back and two pairs of flippers). Thus the specimen of fairly modest size seen off Soay in 1959 could, with its big eyes, thick lips and slight dorsal crest, have been a Merhorse whose mane was not noticed. The other two, seen near Newfoundland, could have been Long-necked.

Geographic Distribution: This animal, if it really exists as a distinct type, is known in Sumatran legend as the Father-of-all-the-turtles. But apart from one doubtful sighting—made less than a mile from the shore near Bombay, and thus possibly due to a python that had strayed to sea—this type has only been seen in cold temperate regions, one of the Newfoundland sightings was in December, and the Soay sighting was in September, and thus took place in cold or very cold waters. This hardly seems suitable for a reptile, and throws even more doubt on this type, which seems due to misinterpretation of other large serpentiforms shaped roughly like turtles.

THE YELLOW-BELLY

Anatomy: A sea-animal of very great size shaped like a tadpole, usually of a very striking yellow colour, marked with a black stripe all along the spine and black transverse bands on the sides.

The huge flat head merges imperceptibly into the flat fusiform body, and the tail is extraordinarily long and tapering.

The total length seems to be between 60 and 100 feet. The figure of 200 feet given for the *Nestor* monster may be pure exaggeration, or because the wake was confused with the tail, or because two animals were following close behind one another.

Geographic Distribution: The Yellow-belly seems to be an essentially tropical animal which sometimes wanders into warmer temperate waters. It seems to be confined to the Indian Ocean and the Pacific. It is chiefly seen in the hot season (May to September), once in October off Natal (+10° C. isotherm) and once in mid-Pacific in August (+10° C. isotherm). It clearly prefers a fairly high temperature.

It now remains to place these animals in their zoological classification, or at least try to do so.

From their vertical undulation the first five, the Super-otter, Many-humped, Many-finned, Merhorse and Long-necked are certainly mammals. The Super-eels, which are often dying or in a pretty poor way when they rise out of the water, are clearly vertebrates with gills, and thus probably fish. Only the Marine Saurian has every appearance of being a reptile, for we must say goodbye to the Father-of-all-the-turtles, which is really too doubtful and suspect. The Yellow-belly is too vaguely described for us to be able to say at all exactly what it is. It could be a fish, probably a shark. But it could also be an amphibian, improbable though this is. All this is very problematical, and until we have more information it will be best to keep the Yellow-belly on ice.

Now let us try to place the remaining seven types as accurately as possible. First the five mammals. There is one which seems as if it must be a pinniped, the Long-necked. With its two pairs of webbed feet and absence of tail, and, of course, its method of moving on land, it is evidently like a sort of huge gressigrade pinniped with a very long neck, and more specialized than the sea-lions for a purely marine existence. It is true that this usually pelagic animal is still able to move on land, but it seems unlikely that it is obliged to go there to give birth: parturition must be able to take place at sea, a considerable advance over the sea-lions. All the same, some pinnipeds already have a tendency in this direction. Victor B. Scheffer, the American expert on this group, writes: 'All pinnipeds give birth on land or ice, though an occasional phocid or walrus may be born in water and yet survive.' And Dr L. Harrison Matthews has recently told me that he has observed this phenomenon in Grey Seals.

The Merhorse is also probably a pinniped, though this is less obvious: for we do not know enough about its hind legs. We hardly know whether they are still present or whether they have been replaced by a bilobate tail, as in the cetaceans. All the same the round phosphorescent eyes, the hairs on the body and the long whiskers on the nose put the Merhorse closer to the pinnipeds than to the cetaceans, or even to the sirenians, which do not have the carnivores' phosphorescent eyes. It must therefore be a pinniped even more specialized for the sea than the Long-necked, since its habitat seems to be semi-abyssal and is at a lower level in the ocean. It represents the most refined tip of the evolution of a group which has removed itself more and more from dry land.[1]

These two very well defined and perfectly recognizable pinnipeds can now be given a scientific name so that they may henceforward be described without ambiguity.

I think the name *Megophias monstrosus* must be abandoned once and for all. It was originally used by Rafinesque to describe the Massachusetts Bay sea-serpent, that is the Many-humped, but without a sufficiently detailed description for it to be recognized. And when Oudemans took it over and modified it to *Megophias megophias* it was based on descriptions of several different animals.

I therefore propose to give the Long-necked sea-serpent (which was known to the ancients as *physeter*, a word which is now, alas, the generic name for the sperm-whales) the name of *Megalotaria longicollis*, or 'the big sea-lion with a long neck'. The Merhorse I propose to christen *Halshippus olai-magni*, or 'the Sea-horse of Olaus Magnus', because the Norwegian bishop was the first to publish a description of it.

Besides these pinnipeds, we have two almost certain cetaceans among our serpentiform mammals, the Many-humped and the Many-finned, both of which seem close to the fossil Archaeoceti with their thin necks.[2]

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[1] The pinnipeds are much more specialized in this direction than is generally thought. The recent work of Professors Wohlschlag and De Vries of Stanford University in California in 1964 showed that Weddell's seal could dive to nearly 250 fathoms, travel twenty miles under the ice without breathing and chase its prey in total darkness, thanks to a kind of sonar, and remain down for half an hour at a time. One can see that such exploits need very delicate adaptation.

[2] We cannot however, rule out the possibility of the Many-humped being a peculiar form of sirenian, the only sea-mammals which are herbivorous. It would then be like Steller's sea-cow, but without being restricted, as the sea-cow is with its diet of seaweed and sea-kale, to coastal waters. It would be a great sirenian feeding on vegetable plankton. This would, of course, suppose considerable specialization.

The other features which favour this identification of the Many-humped are the bilobate tail taking the place of hind legs, which have quite disappeared, the smooth skin with dermic scales in places, and the same strongly contrasted colour above and below. In the Many-finned, the smooth but armoured skin on the body, the horizontally spreading tail, the finned ridge along the sides and the audible breath are even more significant.

The zoological nature of the Super-otter is particularly puzzling. The animal is much too big to be classed among the otters with any probability. On the other hand the tail is much too long for it to be a pinniped, although we are still far from certain about the pinnipeds' exact origin: we do not know whether they derive directly from tailless mammals like the bear, or from long-tailed ones like the otter. In fact the Super-otter's serpentine and extremely flexible spine is most like that of the zeuglodon, the best-known of the Archaeoceti.

But the zeuglodon has no hind legs, and I have shown that to compensate for this it must have had a flattened and widened tail, or a lateral ridge in order to propel itself, and that if it was to paddle along with its front flippers it would need a dorsal fin to keep its balance.

All the same it must have been preceded on the evolutionary ladder by an animal that had not yet lost its hind legs, which would need no ridges and merely have a long tapering tail. This primordial Archaeocetus would therefore look like a gigantic otter, just like our Super-otter, which would then be the most primitive of all the cetaceans, one of which we have no fossil remains, but which had developed to a giant size in the Arctic.

Such a type of beast would be the logical ancestor from which a whole host of Archaeoceti could arise as they gradually lost their hind limbs and developed other organs of propulsion and stabilization. One type would have a wide crescent tail and a small fin and row of humps on its back, and would thus be the Many-humped, closely related to the fossil zeuglodon. Another type would have only a slight crest along the spine, but besides a tail slightly widened at the end, it would have large finned ridges along the sides: it would be the Many-finned.

These three Archaeoceti occupy different geographic zones. The Super-otter is confined to the icy Arctic ocean, coming south only in summer, no doubt to breed, in the more clement Norwegian coastal waters. There begins the territory of the Many-humped, which sticks only to the cold temperate regions of the North Atlantic. In the sub-tropical Atlantic the Many-finned takes over and spreads into the Indian Ocean and the tropical Pacific.

I need hardly say that a study of these three differently specialized Archaeoceti would throw a great deal of light on the origin and evolution of the Cetacea, which is one of the biggest gaps in the history of the mammals.

Each of these Archaecoceti is clearly enough defined to be given a scientific name. The Super-otter, first described by Hans Egede, I propose to call *Hyperhydra egedei*, or 'Egede's Super-otter'; the Many-humped, *Plurigibbosus novae-angliae*, or 'that-with-many-humps of New England', and the Many-finned, *Cetioscolopendra aeliani*, or 'Aelian's cetacean centipede', because it is the same animal that the Greek writer described before Rondelet did so. This last animal is known to the Malagasies as 'Lord-of-the-Sea' (*tompondrano*) and to the Vietnamese as 'millipede' (*con rit*), and is probably therefore the prototype of the oriental dragon. It could well also be that of the Western dragon, since it was no doubt what the Jews described as the leviathan.

The Marine Saurian is probably, as I have said, a surviving thalattosuchian, in other words a true crocodile of an ancient group, a specifically and exclusively oceanic one, which flourished from the Jurassic to the Cretaceous Periods. But it could also be a surviving mosasaur, a sea cousin of the monitors of today. It would not be surprising if it had survived for so long in the sea, since it is well designed to dive deep and remain unseen.

In either case, the only sea-serpent which is certainly a reptile does not belong, as if often thought, to the totally extinct group of Sauropterygia. It is the Long-necked, which by convergence has acquired the outline of a plesiosaur, that has given credit to the notion that such reptiles survive—quite unjustifiably, since it is certainly a mammal.

As the position of the Marine Saurian in the huge group of reptiles is still so uncertain—for we have very little information about it—to give it a scientific name would be quite premature.

The Super-eels are particularly interesting in that they are the only sea-serpents of which we have a specimen, albeit larval: the *Dana*'s 5-foot leptocephalus. This discovery lends weight to the idea that sea-serpents belong to the eel group, which is incontestable provided that this generalization is not applied to them all. It also seems clear that at least two different genera of fishes of the order Apoda are involved, none of which must be neglected. The huge serpentine fishes of the depths, which have contributed to one aspect of the sea-serpent legend when they accidentally appear on the surface are not necessarily *all* eels. The oarfish, which is, of course, classified by science, is a case in point. It is possible that there may be giant forms of *Synbranchus*. At all events I think we have some reason to believe that in the depths of the ocean there are big serpentiform sharks, perhaps related to *Chlamydoselachus*, the strange little Frilled Shark, or perhaps to the rays or the guitar-fishes.

The number of big unknown fish still to be discovered in the middle depths of the ocean is certainly very large, perhaps as large as that of medium-sized unknown fish to be discovered at great depths. But we cannot say much about them, let alone undertake a proper description.

We can now return to a question that has been nagging us throughout this book: 'Why are sea-serpents hardly ever washed ashore?' At all events the various carcases that I have mentioned so far have been disappointing, turning out to be known animals decomposed or mutilated out of recognition. The most we can admit is that in a few rare cases huge eel-like sharks have been found: by Captain Boyle of the schooner *Beaver* in China in 1863; by Captain Hanna at New Harbor, Maine, in 1880; and by the fishing-boat *Crescent City* at Carabelle, Florida in 1896.

But there remain a few in which the animal's identity is still in doubt. There was the long-necked carcase washed up at New River Inlet in 1885 and which, in that locality, seems unlikely to have been a mutilated basking shark. And there are others.

On 20 March 1906 Captain Rathbone of the *Tropper* saw near Dungeness, Kent, a carcase 50 feet long with small ears and white stripes which he took to be a sea-serpent.

On 1 November 1922, three years after he bought the farm of Margate in Natal which has since become the seaside resort of that name, Hugh Ballance told the South African press a very strange tale:

> I saw what I took to be two whales fighting with some sea monster about 1,300 yards from the shore. I got my glasses and was amazed to see what I took to be a polar bear, but of truly mammoth proportions. This creature I observed to rear out of the water fully twenty feet and to strike repeatedly with what I took to be its tail at the two whales, but with seemingly no effect.

A gigantic Polar Bear with a tail long enough to use as a whip is clearly no ordinary bear—especially as the Polar Bear is never found in the southern hemisphere—it is also something quite new even for the most incorrigible of sea-serpent hunters.

The battle lasted three hours and was watched by crowds on the shore, after which the two whales made off, leaving the monster floating lifeless on the surface.

The next night the tide threw the great carcase on the beach. It was described thus by T. V. Bulpin in his book, *Your Undiscovered Country*, about the beauties of South Africa:

> It was certainly a giant of a creature, forty-seven feet long, ten feet in breadth and five feet high. At one end it had a trunk-like appendage about fourteen inches in diameter and five feet long. The creature was covered in snow-white hair and seemed to be devoid of blood.

This incredible carcase lay on the beach for ten days. Many people came to stare at it. But no zoologist took the trouble to examine and identify it before the spring tide washed it away, for it has never been classified.

Around mid-June 1928 a serpentine animal 89 feet long, which was immediately described as a 'prehistoric reptile' was found on the beach in the Gulf of Fonseca, San Salvador. According to the cable sent to the *New York Times* it was 'marked with black and white stripes, was exceedingly corpulent and a horn protruded from its head. Its fangs were one and a half inches long.'

In November 1930 a new furred sea-monster was washed up on Glacier Island in Alaska. It was only 25 feet long, its head being 5 feet and its beak no less than 3 feet.

In May 1932, no doubt because the water had been poisoned, the shores of Newfoundland were covered with millions of dead fish. Among them was a huge beast with a pointed snout and sharp teeth and looking very like a snake.

On 2 October 1944 a furry monster was washed up on the rocks of Machrihanish on the Kintyre peninsula in Scotland. It was 20 feet long, had huge eyes and feet, and crowds came and stared at it.

Most of these beasts are not described in any detail. We should not be surprised at the mention of fur, so unusual among sea-animals; for the appearance of stiff hair is soon produced by decomposition both in sharks and whales, once the skin comes off and the very fibrous connecting tissue begins to dry out. It is more surprising that none of these events, where specimens and samples could have been preserved, had any consequences. If they did, the results must have been disappointing, for they received no publicity. When carcases of sea-monsters have been examined by really competent people they have almost always proved to be an oarfish, a basking shark or some well or little known cetacean.

There is no point in speculating on the doubtful cases. It is better to admit that except for eel-shaped sharks, no kind of sea-serpent is ever washed up. And there is good reason for this.

With the Super-eels, which are clearly semi-abyssal fish, the question hardly arises. Those that dwell in that part of the ocean sink when they die and have little chance of being washed up unless they come to the surface in exceptional circumstances. The extreme rarity of washed-up oarfish is evidence of this. Moreover if a live eel is thrown on the beach it can soon wriggle off: eels can move easily on dry land, and some species do not hesitate to do so. In any case, who has ever seen a *known* species of eel washed up on the shore?

The same goes for the Marine Saurian, whether its legs have been transformed to flippers or not, it could still wriggle easily on the ground like a snake.

Indeed it is better to tackle the question from the other end and ask, 'Which sea-animals are usually found washed up?'

There are those, of course, which have no lungs and suffocate in the air. But this does not usually happen at once, and they have time enough to get back in the water. The animals most in danger are those which, once ashore, find it mechanically impossible or very difficult to get back from dry land to the sea. Thus squids, which are designed for swimming at speed, cannot do so, unlike octopuses, which are used to crawling on the bottom and lifting their arms to walk: once on land a squid is doomed. Likewise all the fish which are very narrow are helpless on the ground where they fall on their sides. All the same, by violent jack-knifing they sometimes manage to get back in the water when it is very near—as every angler knows to his cost. But this is only true of lighter fish. Beyond a certain size aquatic animals have not enough muscular strength to leap in the air.[1] This is what makes the predicament of washed-up cetaceans so serious, although they have lungs and could in theory survive fairly long out of the water. The biggest ones are so crushed under their own weight that they can no longer dilate the thorax to breathe, and soon suffocate.

All the cetaceans of the two recent groups, even the smallest, are so specialized that they can no longer move on land. They are torpedo-shaped and can neither writhe like a snake nor use their one remaining pair of limbs, which is sometimes placed too high to touch the ground, to push themselves along.

This does not mean that all the sea-mammals whose limbs have turned to flippers are unable to move on land. Quite apart from the sea-lions and other gressigrade pinnipeds, whose hind legs can turn forwards so that they can stand up and move in small bounds, there are the seals and other reptigrade pinnipeds, whose backward-pointing hind legs are virtually a bilobate tail and force them to drag their bellies on the ground. But unlike the cetaceans, they are not helpless on dry land, and for a good reason: they have *a thin neck*. This enables them to swing their heads backwards and forwards, rocking the whole body and allowing it to move forward. Watch them going flat out on a rocky shore, and you will see how this violent motion of the head enables them to move.

So what about our great serpentiforms? The Long-necked, being gressigrade like the sea-lions and known to be amphibious, has no problem. The Merhorse, more thoroughly adapted to life in the ocean, and therefore probably reptigrade like the seals, is in the same position as they are and could wriggle off, seal fashion, if accidentally washed ashore.

Our three Archaeoceti seem to give more cause for concern. But in fact they are not in the same situation as the cetaceans in recent groups. Not having been turned into almost inflexible torpedoes, and having a thin neck and very flexible spine, they should be able to crawl at least as easily as a big seal. And, being more elongated than the modern whales, they would be less handicapped by their huge weight because it would be spread over a larger area. The Super-otter, being still a quadruped, should have no difficulty. The cetacean centipede or Many-finned might find its fairly rigid lateral projections useful in getting a grip when crawling on the ground.

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[1] Strength, being a function of the area of cross-section of the muscles, is proportionate only to the square of the length, whereas the mass is proportionate to the cube.

The thin neck, which is the chief feature of at least five types of great serpentiforms, is not only useful in helping them to crawl if washed up, it may also *prevent* this from happening to them. The Dutch specialist W. H. Dudok van Heel showed in 1964 in a study of 133 cases of cetaceans being washed up *en masse*, that their echo-sounding system ceases to work as soon as they stray into shallow water. Their sonar may be upset because the echo comes back too quickly, or because too many echoes come from different distances when the bottom shelves, and obviously it ceases to work as soon as the water is so shallow that their head is out of it. In any case they become bewildered, like a man struck blind, and are apt to make for the shore instead of away from it. This would explain the extraordinary mass-suicides of some species of cetaceans.

Nothing like this can happen to an animal with a thin neck, even if it normally uses sonar to navigate, to hunt its prey and avoid its enemies. As soon as its sonar is disturbed and ceases to work in shallow water, it need only raise its head well above the water to see the shore and the rocks.

Thus, if the seven best defined types of great serpentiforms have not yet been found washed up, it is simply because they all belong by nature to the category of animals least likely to be stranded, and quite capable of getting off the shore again, if by misfortune they are.

The legend of the Great Sea-serpent, then, has arisen by degrees from chance sightings of a series of large sea-animals that are serpentiform in some respect. Some, like the oarfish, the whale-shark and Steller's sea-cow, have been unmasked in the last few centuries. But most remain unknown to science, yet can be defined with some degree of exactitude, depending on the number and precision of descriptions that refer to them.

Among them we have, first, three Archaeoceti or very primitive Cetacea (or two Archaeoceti and one specialized sirenian) which, by occupying different regions divide the ocean between them into different areas (the Super-otter in the Arctic Ocean, the Many-humped in the temperate North Atlantic and the Many-finned in the belt of tropical and subtropical waters around the world); then two pinnipeds, not both equally specialized, and several eel-like fishes, which are all cosmopolitan, but, living at different depths, divide the ocean into different layers (the Long-necked living near the surface, the Merhorse at medium depths, and the eel-like fishes at great depths). Finally a pelagic saurian shaped like a big crocodile seems to be confined to a zone of warm water at a depth yet to be discovered. At all events the related types always occupy quite distinct ecological niches and cannot compete except where these habitats meet, which agrees perfectly with the laws of nature.

To which conclusions, the outcome of an inquiry that has taken more than ten years of very hard work, I need make no other comment than that of Sherlock Holmes: 'It was a piece of very simple reasoning.'

THE END

Paris, Île du Levant, 1954–65

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Chronological Table of Sightings

(real, apparent and claimed) of large serpentiform sea-animals of all kinds thought to be unknown to science

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The meaning of the abbreviations is as follows:
FT='Father-of-all-the-Turtles'; LN='Long-necked'; ME='Merhorse'; MF='Many-finned'; MH='Many-humped'; MS='Marine saurian'; SE='Super-eel'; SO='Super otter'; YB='Yellow-belly'.

Note: So that the reference to each sighting may easily be found in the text, either the name of one witness or that of the ship from which the sighting was made is always given where possible; and these names will be found in the Index. Only the anonymous sightings are, as a rule, indexed under the place where they occurred.

1639 (before) – Cape Ann, Mass., U.S.A. – Some Englishmen and 2 Indians = ?
1666 (before) – Norwegian coast – Burgomaster of Malmö = ?SO
1687 – Dramsfjord, Norway – Several people = ?SO
1693–1696 (between) – Mauritius – François Leguat = ?Conger ?Moray
1700? – North coast of Australia – William Dampier = Sea-snake
1734 (6 Jul) – Godthaab, West of Greenland – Hans Egede = SO
1742 (before) – Sarica, Sicily – Tunny-fishermen = SE
1744 – Sundmör, Hordaland, Norway – Dagfind Korsbeck = ?SO
1746 (Aug) – Jule Næss, Möre, Norway – Von Ferry, etc. = ?SO
1751 (May) – Broad Bay, Maine, U.S.A. – Joseph Kent = ?
1753 (before) – Sundsland, Hordaland, Norway – A fisherman = SO
1753 (before) – Norwegian coast – Governor Benstrup = ?
1753 (before) – Heröy, Romsdal, Norway – Reutz = ?
1753 (before) – Heröy, Romsdal, Norway – Tuchsen = SO
1753 (before) – Norwegian coast – A sailor, informant of Pontoppidan = ?
1753 (before) – Sundmör, Hordaland, Norway – Some peasants = SO
1759? – Bergen – Norwegian captain = ?SO
1763? – Bergen – Norwegian captain = ?SO
1773? – East coast of U.S.A. (?Maine) – Captain Paul Reed = ?
1779 (summer) – ?Penobscot Bay, Maine, U.S.A. – *Protector* = ?LN
1779? – Penobscot Bay, Maine, U.S.A. – Stephen Tuckey = ?LN ?SE
1780 (May) – Broad Bay, Maine, U.S.A. – *Boston* = ?LN ?SE
1780? – Meduncook, U.S.A. – ? = ?
1780? – Penobscot Bay, Maine, U.S.A. – ? = HOAX
1781? – Near or in Baltic – Sir Alexander Ball = ?SO
1782 – Bagaduse? – British troops = ?
1786 (1 Aug) – North-east of the Azores – *General Coole* = ?LN ?SE
1787? – Penobscot Bay, Maine, U.S.A. – Crocket = ?

1793 (20 Jun) – Penobscot Bay, Maine, U.S.A. – E. Crabtree = ?LN ?SE
1794? – Penobscot Bay, Maine, U.S.A. – Inhabitants of Fox Island = ?
1799 (before) – North Atlantic – Baird = ?
1799? – Penobscott Bay, Maine, U.S.A. – Two young men = ?LN ?MH
1802 (Jul) – Cape Rosoi, Long Island, Maine, U.S.A. – Rev. Abraham Cummings = ?ME
1805 (Oct) – Menai Strait, Wales – *Robert Ellis* = ?Eel ?HOAX
1808 (Jun) – Coll, Outer Hebrides – Rev. Donald Maclean = ?ME
1808 (Jun) – Canna, Outer Hebrides – 13 boats = ME
1809 (before) – East coast of U.S.A. – Capt. Lillis = ?LN ?SE
1811 (before) – Penobscot Bay, Maine, U.S.A. – Miller = ?
1815 (20 Jun) – Cape Cod, Mass., U.S.A. – Capt. E. Finney, etc. = MH
1815 (21 Jun) – Cape Cod, Mass., U.S.A. – Capt. E. Finney = MH
1816 (summer) – North Atlantic – New York ship = ?*Architeuthis*
1816 (Dec) – Mariveles, Manila, Philippines – Piddington = Whale-shark
1817 (before) – Penobscot Bay, Maine, U.S.A. – Inhabitants of Mount Desert Island = ?
1817 (before Aug) – Bering Island, Komandorski Islands – Kriukof = ?Sea-cow
1817 (*c.* 6 Aug) – Cape Ann, Mass., U.S.A. – Two women = ?
1817 (6 to 8 Aug) – Cape Ann, Mass., U.S.A. – Some fishermen = ?
1817 (10 Aug) – Gloucester, Mass., U.S.A. – Amos Story = ?MH
1817 (12 Aug) – Gloucester, Mass., U.S.A. – Solomon Allen III = MH
1817 (13 Aug) – Gloucester, Mass., U.S.A. – Solomon Allen III = MH
1817 (14 Aug) – Gloucester, Mass., U.S.A. – Matthew Gaffney, etc. = MH
1817 (15 Aug) – Gloucester, Mass., U.S.A. – James Mansfield = MH
1817 (16 Aug) – Cape Ann, Mass., U.S.A. – Col. Perkins, etc. = MH
1817 (17 Aug) – Gloucester, Mass., U.S.A. – William Foster, etc. = ?MH
1817 (18 Aug) – Gloucester, Mass., U.S.A. – William Pearson, etc. = MH
1817 (19 Aug) – Cape Ann, Mass., U.S.A. – ? = ?
1817 (?22 Aug) – Gloucester, Mass., U.S.A. – Mansfield, etc. = ?
1817 (23 Aug) – Gloucester, Mass., U.S.A. – Amos Story = ?MH
1817 (?end Aug) – Gloucester, Mass., U.S.A. – Several ships = ?
1817 (28 Aug) – Cape Ann, Mass., U.S.A. – *Laura* = MH
1817 (? Aug) – Cape Ann, Mass., U.S.A. – Revenue cutter = ?
1817 (3 Oct) – Long Island Sound, New York, U.S.A. – J. Guion = MH
1817 (5 Oct) – Long Island Sound, New York, U.S.A. – T. Hertell = MH
1818 (before Feb) – Calabrian Coast, Italy – Fishermen = HOAX
1818 (20 May) – Penobscot-Hingham, Maine, U.S.A. – *Adamant* = HOAX
1818 (beginning Jun) – Cape Henry, Virginia, U.S.A. – *Wilson* = HOAX
1818 (19 Jun) – Long Island, New York, U.S.A. – ? = ?
1818 (21 Jun) – Cape Ann, Mass., U.S.A. – *Delia* = HOAX
1818 (27 Jun) – Portland, Maine, U.S.A. – Several fishermen = ?SE
1818 (2 Jul) – Portland, Maine, U.S.A. – Webber, etc. = ?
1818 (9 Jul) – Jeffry's Ledge, Mass., U.S.A. – *Mary* = HOAX
1818 (11 Jul) – Portland, Maine, U.S.A. – Some gentlemen = ?SE
1818 (?22 July) – Gloucester, Mass., U.S.A. – ? = ?
1818 (23 Jul) – Gloucester, Mass., U.S.A. – A fisherman, etc. = ?MH
1818 (25 Jul) – Gloucester, Mass., U.S.A. – W. Sargent = MH
1818 (26 Jul) – Gloucester, Mass., U.S.A. – ? = ?
1818 (29 Jul) – Gloucester, Mass., U.S.A. – Boat = ?
1818 (30 Jul) – Gloucester, Mass., U.S.A. – Capt. Webber, etc. = ?
1818 (Jul) – Between Faeroes and Hebrides – Capt. Brown = ?LN
1818 (summer) – Foldenfjord, Tröndelag, Norway – Fishermen from Sejerstad = ?
1818 (1 Aug) – Salem, Mass., U.S.A. – Several boats = ?
1818 (12 Aug) – Gloucester, Mass., U.S.A. – T. Hodgkins, etc. = MH
1818 (16 Aug) – Squam, Mass., U.S.A. – Many people = ?MH
1818 (19 Aug) – Squam, Mass., U.S.A. – Capt. Richard Rich, etc. = ?MH
1818 (4 Sep) – Boston, Mass., U.S.A. – Capt. Richard Rich = HOAX (tunny)

1819 (before) – Cape Breton, Newfoundland, Canada – W. Lee = ?MH
1819 (6 Jun) – Race Point, Mass., U.S.A. – *Concord* – MH
1819 (Jul) – Ottersum and Krogöy, Hordaland, Norway – Capt. Schilderup, etc. = SO
1819 (Aug) – Vega fjord, Nordland, Norway – John Greger, etc. = SO
1819 (Aug) – Boston, Mass., U.S.A. – Soldiers from Fort Independence = ?
1819 (12 Aug) – Nahant, Mass., U.S.A. – ? = ?
1819 (13 Aug) – Nahant, Mass., U.S.A. – James Prince, etc. = MH
1819 (Aug) – Nahant, Mass., U.S.A. – Nathan Chase, etc. = MH
1819 (26 Aug) – Gloucester, Mass., U.S.A. – *Science* = MH
1819 (mid-September) – Massachusetts Bay, U.S.A. – ? = ?MH
1819 (15 Nov) – ?North Sea – *Elephant* = HOAX
1819 (17 Dec) – Long Island, New York, U.S.A. – *Sally* = ?HOAX
1819 – Boston, Mass., U.S.A. – Naval officer = ?
1820 (before) – Fieldvigen, Norway – Some inhabitants = ?
1820 (before) – North Cape, Finmark, Norway – Some fishermen = SO
1820 (before) – Trondhjem, Tröndelag, Norway – Bishop of Nordland and Finmark = SO
1820 (before) – Mageröy Sound, Finmark, Norway – Gravedigger = SO
1820 (before) – Varangerfjord, Finmark, Norway – Several people = ?
1820 (summer) – Hundholm, Tröndelag, Norway – Fishing-boat skipper = SO
1820 (5 Aug) – Swampscott, Mass., U.S.A. – Andrew Reynolds, etc. = MH
1820 (Aug) – Nahant, Mass., U.S.A. – Col. Perkins, etc. = ?
1820–1821? – Manila Bay, Philippines – American sailors = Whale-shark
1819–1822? Barencthy's Rocks (North Atlantic) – *Lady Combermere* = ?LN
1821 (summer) – Nahant, Mass., U.S.A. – Col. Perkins, etc. = ?
1821 (2 Aug) – Portsmouth, New Hampshire, U.S.A. – Samuel Duncan, etc. = MH
1821 (Sep) – Nantucket, Mass., U.S.A. – Francis Joy,, etc. = ?
1821? – Massachusetts, U.S.A. – Capt. Bennet = ?
1822 (before) – Scottish coast – A friend of Sir Walter Scott? = ME
1822 (before) – Stenness, Orkney; Vailey and Dunrossness, Shetland = ?
1822 (summer) – Soröy Island, Finmark, Norway – Many inhabitants = SO
1822 (summer) – Nahant, Mass., U.S.A. – Many inhabitants = ?
1823 (Jul) – Gurnet, Mass., U.S.A. – Weston = ?MH
1823 (12 Jul) – Nahant, Mass., U.S.A. – Francis Johnson, Jr. = MH
1824 (Jan) – 60 miles off Uruguay – A friend of Prof. Silliman = ?ME
1824 (11 Aug) – Near Portsmouth, Mass., U.S.A. – Ruggles = ?MH ?SE
1825 (15 Jul) – Halifax, Nova Scotia, Canada – Goreham, etc. = MH
1826 (16 Jun) – South of Newfoundland, Canada – *Silas Richards* = MH
1826 (18 Jun) – Cape Cod, Mass., U.S.A. – A ship = ?
1827 (end Aug) – Oslofjord, Norway – Seven people = SO
1827 (26 Aug) – Oslofjord, Norway – Several people = ?
1827 (3 Sep) – Oslofjord, Norway – ? = ?
1827 (5 Sep) – Oslofjord, Norway – ? = ?
1827 (9 Sep) – Oslofjord, Norway – Several people = ?
1827 (27?) – Between Nantucket and Hartford, Conn., U.S.A. – *Levant* = ?
1827 (24?) – Mount Desert Rock, Maine, U.S.A. – *Lydia* = HOAX
1825–1828? – South Atlantic – *Blossom* = ?LN ?SE
1829 (end Jul) – South-west of Cape of Good Hope – *Royal Saxon* = ?LN ?SE
1829? – Oslofjord, Norway – Lars Johnöen = ME
1830 (3 Jan) – Matanzas, Havana, Cuba – *Neptune* = Whale
1830 (23 Mar) – Charleston, S. Carolina, U.S.A. – *Eagle* = ?MS ?MH
1830 – Kennebec, Maine, U.S.A. – Gooch, etc. = ?MH ?LN
1831 – Boothbay, Maine, U.S.A. – *Detector* = ?
1831 – Long Island, New York, U.S.A. – 8 to 10 gentlemen = MH
1831 (summer) – Norwegian fjords – ? = ?
1832 (summer) – Rödö and Södelöw, Nordland, Norway – Many people = ?LN
1833 (15 May) – Mahone Bay, Nova Scotia, Canada – Capt. Sullivan, etc. = MH

1833 (Jul) – Nahant, Mass., U.S.A. – Many people = ?
1833 (Jul) – Lynn, Mass., U.S.A. – 40 to 50 people = ?
1834 (May) – Bay of Bengal – Foley = Whale-shark
1834 (22 Jun) – South of Newfoundland – *Robertson* = Rorqual
1834 (beginning of Jul) – Castine, Maine, U.S.A. – Schooner crew, etc. = ?LN
1834 (summer) – Gloucester, Mass., U.S.A. – *Mangehan* = ?
1835 (Mar–Apr) – Gloucester, Mass., U.S.A. – *Mangehan* = ME
1837 (end Jul) – Storfosen and Krovaag, Trõndelag, Norway – ? = ME
1836–1840? – Gulf of California – H.M.S. *Fly* = ?MS
1839 (mid-Aug) – Nahant?, Mass., U.S.A. – Dr Amos Binney, etc. = ?
1839 (mid-Aug) – Nahant?, Mass., U.S.A. – Thomas Grattan, etc. = ?
1839 – Boston, Mass., U.S.A. – Lt. Bubier = ?
1839 (before?) – Kennebec, Maine, U.S.A. – Capt. Smith = ?
1840 (21 Apr) – Gulf of Mexico – *Ville de Rochefort* = ?MH
1840 – Moldefjord, Romsdal, Norway – Hammer, etc. = ?
1840 (summer) – East coast of U.S.A. – ? = ?
1840 (before 15 Sep) – Massachusetts, U.S.A. – ? = ?
1841 (before) – Kristiansund, Mõre, Norway – Nils Ree = ME
1841 (before) – Kristiansund, Mõre, Norway – John Johnson = ?SO
1841 (before) – Kristiansund, Mõre, Norway – Wilhelm Knudtszon, etc. = ME
1841 (before) – Kristiansund, Mõre, Norway – Gæschke = ME
1841 (14 Jul) – Gulf of Mexico – John Lloyd Stephens = Whales
1841 – Kristiansund, Mõre, Norway – Several people = ?
1843 (summer) – Ibbestad, Kristiansund, Mõre, Norway – ? = ?
1843 – Kristiansund, Mõre, Norway – Some fisherman = ?
1844 (Oct) – Arisaig, Nova Scotia, Canada – Barry = MH
1845 (28 Jul) – Romsdalfjord, Norway – Lund, etc. = ?SO ?LN
1845 (Aug) – Merigomish, Nova Scotia, Canada – 2 observers = ?MH
1843 (summer) – Prince Edward Island, Nova Scotia, Canada – Some fisherman = ?
1845 – Bergen, Hordaland, Norway – J. D. Morries Stirling, etc. = ?SO
1845–1846? (southern summer) – Cape Town, South Africa – C. A. Fairbridge, etc. = ?
1846 (before) – Between Iceland and Faeroes – Capt. Christmas = LN
1846 (Feb) – Capes Charles and Henry, Virginia, U.S.A. – Capt. Lawson = ?MF ?MH
1846 (Aug) – Nantucket, Cape Cod, Mass., U.S.A. – Whaleship = ?
1846 (Aug) – Cape Cod, Mass., U.S.A. – B. H. Révoil, etc. = MH
1846 (summer) – St Margaret, Nova Scotia, Canada – James Wilson, etc. = ME
1846 (8 Aug) – Bjornfjord, Hordaland, Norway – Daniel Salomonson, etc. = ?SO
1846? – St Margaret, Nova Scotia, Canada – George Dauphiney = ?
1848 (before) – Romsdalfjord, Norway – A priest = SO
1848 (before) – Romsdalfjord, Norway – A gentleman = ?
1848 (before) – Bergen, Hordaland, Norway – Some fishermen = ?
1848 (6 Aug) – Between St Helena and the Cape – H.M.S. *Daedalus* = ?LN
1848 (20 Sep) – Congo coast – *Daphne* = HOAX
1848 (31 Dec) – West of Oporto, Portugal – H.M.S. *Plumper* = LN
1849 (18 Feb) – Cumberland Island, Florida, U.S.A. – *Lucy and Nancy* = ?LN ?SE
1849 (Mar) – Portugal – Commander Nolloth = ?
1849 (30 May) – South of Australia – *Alpha* = Giant ray
1849 (summer) – St Margaret, Nova Scotia, Canada = Joseph Holland, etc. = ??
1849 (15 Sep) – On voyage to Singapore – H.M.S. *Cleopatra* = ?Python
1849 – Swampscott, Mass., U.S.A. – J. Marston = ?
1850 (15 Mar) – Port Royal, S. Carolina, U.S.A. – Many people = HOAX
1850 (28 Aug) – Old Head of Kinsale, Cork, Ireland – R. W. Travers, etc. = HOAX
1850 (31 Aug) – Dunwoody Head, Cork, Ireland – R. W. Travers, etc. = HOAX
1850 (2 Sep) – Old Head of Kinsale, Cork, Ireland – *Antelope* = HOAX
1850 (9 Sep) – Sovereign Islands, Cork, Ireland – John Good, etc. = HOAX
1850 (mid-Sep) – Ballycottin Bay, Cork, Ireland – Fisherman = HOAX

1850 (24 Sep) – Youghal, Cork, Ireland – ? = HOAX
1850? – Between Barcelona and Havana – Catalan frigate = LN
1851 (before) – Greiss Bay, Sutherland, Scotland – Mrs M'Iver = ?LN
1852 (before) – Plymouth, Mass., U.S.A. – A gentleman = ?MH
1852 (before) – Manomet, Mass., U.S.A. – Daniel Webster, etc. = ?
1852 (13 Jan) – Near Marquesas, Pacific – *Monongahela* = HOAX
1852 (28 Aug) – South of South Africa – *Barham* = MF
1852 – Between Lagos, Nigeria and Liverpool – *Peggy* = ?LN ?SE
1854 (before) – Scottish coast – Andrew Strang = ?LN ?ME
1854 (before) – Norway fjords – ? = ?
1854 (spring) – Savannah, Georgia, U.S.A. – *William Seabrook* and *Isabel* = ?LN
1854 (8 Mar) – Singapore – *Benjamin* = ??
1854 (4 Sep) – South Africa – *Albeona* = Rorqual
1854? – St Helena – De Weerdt's grandfather = ME
1856 (30 Mar) – North Atlantic, latitude of Canaries – *Imogen* = ?LN ?MH
1856 (8 Jul) – South Africa – *Princess* = MF
1856? – St Helena – Lamport and Holt captain = ?
1857 (16 Feb) – Cape Town, South Africa – Dr Biccard, etc. = ??
1857 (12 Dec) – St Helena – *Castilian* = ?SE ?LN ?ME
1858 (26 Jan) – Between St Helena and Cape Town – *Carnatic* = ?LN ?SE
1858 (9 Jul) – ? – *Hendrik Ido Ambacht* = HOAX
1858–1859? – Malacca Straits – *Krishna* and *Menx* = ?
1859 (25 Apr) Indian Ocean – *British Banner* = HOAX
1860 (before) – Gulf of Bengal – *Nemesis* = MS
1860 (? Sep) – Whitehall, Ireland – Samuel Townsend, etc. = HOAX
1861 (? Sep) – Barloge, Ireland – Robert Atkins = HOAX
1861 – Ushant, Brittany, France – *Delta* = ?LN ?ME
1863 (May) – Between Canaries and Cape Verde Islands – *Athenian* = ME
1864 (before) – St Margaret, Nova Scotia, Canada – W. Crooks, etc. = ?LN
1870 (12 Mar) – Caribbean – *Saladin* = Rorqual
1870 (15 Oct) – Norfolk Island – John Adams, etc. = SE
1871 – Australian coast – *Granada* = ?
1871 (before Dec) – Kilkee, Co. Clare, Ireland – Several people = ME
1871 (30 Dec) – South Africa – *Silvery Wave* = HOAX
1872 (13 May) – Gulf of Mexico – *St Olaf* = MF
1872 (26 Jul) – Cape Coast, Ghana – *Torch* = SE
1872 (20 Aug) – Between Skye and Scotland – *Leda* = ?MH
1872 (21 Aug) – Between Skye and Scotland – *Leda*, etc. = ?MH
1872 (23 Aug) – Loch Duich – Alexander Macmillan, etc. = ?MH
1872 (24 Aug) – Loch Duich – Alexander Macmillan, etc. = ?MH
1873 (20 Mar) – West Indies, H.M.S. *Orontes* = ?LN ?SE
1873 (16 Sep) – Dunrobin, Sutherland, Scotland – Lady F. Leveson Gower, etc. = ?
1873 (17 Sep) – Golspie, Sutherland, Scotland – Dr Soutar = ?LN
1873 (18 Sep) – Golspie, Sutherland, Scotland – Rev. James Joass = ?LN
1873 (18 Nov) – Firth of Forth, Scotland – 120 people = ?SE
1875 (8 Jul) – Cape São Roque, Brazil – *Pauline* = SE
1875 (13 Jul) – Cape São Roque, Brazil – *Pauline* = SE
1875 (17 Jul) – Plymouth, Mass., U.S.A. – *Norman*, etc. = MH
1875 (30 Jul) – Swampscott, Mass., U.S.A. – Yacht *Princess* = MH
1876 (11 Sep) – Malacca Straits – *Nestor* = YB
1877 (Apr) – Oban, Argyll, Scotland – ? = HOAX
1877 (21 May) – Between Ceylon and Sumatra – *Georgina* = ?YB ?SE
1877 (2 Jun) – Cape Vito, Sicily – *Osborne* = ?MF
1877 (15 Jul) – Gloucester, Mass., U.S.A. – *Gulnare* = MH
1877 (30 Jul) – North Atlantic, latitude of Gibraltar – *Sacramento* = MS
1877 (Oct–Nov?) – Mocha, Yemen, Red Sea – *Sumatra* = ?

1877 – Suez, Egypt, Red Sea – Warship = ?
1878 (26 Feb) – Nerowas Island – *Durham* = ?
1878 (summer) – Aalesund, Romsdal, Norway – ? = ?
1878 (Dec) – Suez or Aden?, Red Sea – *Poonah* – MF
1878? – New Caledonia barrier reef – *Le Seudre* = ME
1879 (28 Jan) – Gulf of Aden – *City of Baltimore* = ?LN ?SE
1879 (30 Mar) – Géographe Bay, Western Australia – Rev. H. W. Brown, etc. = MF
1879 (5 Apr) – Satanomisaki, Japan – *Kiushiu Maru* – *Architeuthis*
1879 (5 Aug) – 100 miles west of Brest, France – *Privateer* = SE
1879 (4 Sep) – Between London and Quebec – *Columbia* = HOAX
1879 (14 Oct) – Gulf of Suez, Red Sea – H.M.S. *Philomel* = Whale
1879 (21 Dec) – Cape San Lucas, Lower California – *Granada* = ?LN ?SE
1879 – Indian Ocean – *Priam* = ?LN ?SE
1880 (5 Jun) – Monhegan Island, Maine, U.S.A. – *Chalcedony* = Whale
1880 (11 Aug) – North Pacific – *Oceanic* = YB
1881 (before) – Ningpo, mouth of Yangtse, China – J. H. Hoar = SE
1881 (before) – Suva, Viti Levu, Fiji – Major James Harding = ME
1881 (before) – Near Melbourne, Victoria, Australia – *Carlisle Castle* = ME
1881 (10 Aug) – North Atlantic – *Don* = HOAX
1881 (12 Nov) – Cape Town, South Africa – C. M. Hansen = ME
1882 (18 May) – Fetlar, Shetland – *Bertie* = HOAX
1882 (28 May) – Butt of Lewis, Hebrides – Some fishermen = ?
1882 (31 May) – Butt of Lewis, Hebrides – *Katie* = MH
1882 (3 Sep) – Orme's Head, Wales – W. Barfoot, etc. = LN
1882 (11 Oct) – Bude, Cornwall – Rev. E. Highton = ?
1883 (26 Jul) – Libreville, Gabon – *Elisabeth* = LN
1883 (autumn) – Las Perlas Archipelago, Panama – *Hope On* = LN
1883 (15 Oct) – Bristol Channel, England – ? = LN
1883 (before 12 Dec) – Newfoundland Banks – American schooner = ?FT
1883? (20 Aug) – Georgetown, British Guiana – ? = HOAX
1884 (31 Aug) – Durban, Natal, South Africa – *Churchill* = ?LN ?SE
1884 (16 Oct) – South of Alaska – *Alaska* = HOAX
1885 (5 Aug) – North Atlantic, latitude of Gibraltar – *Emblem* = ?LN ?SE
1885 (16 Aug) – Rödöy and Melöy, Nordland, Norway – Some lads = ?SO
1885 (4 Oct) – Umhlali, Natal, South Africa – Several people = YB
1886 (before) – Perak, Malacca – Capt. Douglas = ?
1886 (summer) – Loch Duich, Scotland – ? = ?
1886 (24 July) – Rockport, Mass., U.S.A. – 8 people = ?
1886 (29 Aug) – Cape Cod, Mass., U.S.A. – B. A. Colona = ?
1886 (29 Aug) – Hudson River, New Jersey, U.S.A. – 2 young people = ?SE ?ME
1886 (Aug) – East coast of U.S.A. – ? = ?
1886 (Aug) – East coast of U.S.A. – Jonah = ?LN ?SE
1886 (Aug) – Gloucester, Mass., U.S.A. – G. P. Putnam = ?
1886 (Sep) – Norwalk, Conn., U.S.A. – ? = ?
1886 (11 Oct) – Newfoundland Banks – *Hattie F. Walker* = HOAX
1886 (end Dec) – Red Sea – *Le Parseval* = ?LN ?SE
1887 (Jul) – Fort Popham, Maine – 3 people = ?
1887 (30 Jul) – Shuna, Argyll, Scotland – *Shiantelle* = ??
1888 (22 Jan) – Travancore, India – *Sans Peur* = Oarfish
1888 (Jul) – 30 miles from Sandy Hook, New York, U.S.A. – *Wisconsin* = ?
1888 (Aug) – St John's, Newfoundland, Canada – ? = HOAX
1888 (30 Sep) – Suakin, Sudan, Red Sea – *Messir* = ?LN ?SE
1889 (May) – Between Liverpool and Philadelphia – A captain = ?
1889 (1 Sep) – Madagascar – *La Meurthe* = ??
1889? – Between Gibraltar and Algiers – 'Captain' = LN
1890 (June) – Long Island, Conn., U.S.A. – *Anny Harper* = ?LN ?SE

1890 – Borneo – Mustard = ?
1890 (8 Jun) – Great Sandy Island, Queensland – James Alsbury, etc. = HOAX
1890 (9 Jun) – Great Sandy Island, Queensland – Robert = HOAX
1890 (11–15 Jun?) – Great Sandy Island, Queensland – Miss S. Lovell, etc. = HOAX
1891 (14 Jul) – North Island, New Zealand – *Manapouri* = ?LN ?SE
1891 (25 Jul) – Mariveles, Manila, Philippines – *Ceres* = Whale-shark
1891 (1 Aug) – North Island, New Zealand – *Rotomahana* = ?LN ?SE
1891 (22 Sep) – Peterhead, Aberdeen, Scotland – Fishermen = HOAX
1891 – Pablo Beach, Florida, U.S.A. – Bathers = ?
1892 (23 Sep) – Digernæs, Rogaland, Norway – Nordmark, etc. = ?Whale
1892 (3 Oct) – Firth of Tay, Angus, Scotland – *Catherine* = ?LN ?SE
1892 (before Nov) – Between Bey Beach and Lagos, Nigeria – *Angola* = ?ME
1892 – On passage to Bermuda – H.M.S. *Tartar* = ?
1891–1893? – West coast of France – Edward Rockcliff, etc. = ?LN ?SE
1893 (after 1 Jun) – Along Bay, Vietnam – *La Mutine* = MF
1893 (Sep) – Lochalsh, Scotland – Dr Farquhar Matheson = LN
1893 (4 Dec) – Cape Blanc, Mauritania – *Umfuli* = LN
1894 (mid Jul) – Hammerfest, Finmark, Norway – Several crews = ?SO
1894–1895? – New Aberdour, Aberdeen, Scotland – H. C. Birnie and his father = ?
1895 (Jan) – Bernera, Lewis, Hebrides – Angus Macdonald = ?MH ?LN
1895 (7 Feb) – Butt of Lewis, Hebrides – Berners = ?MH ?LN
1896 (before) – Along Bay, Vietnam – Lieut. Victor G. = ?
1896 (7 Sep) – Stornoway, Lewis, Hebrides – Ivan G. MacGregor = HOAX
1896 (Sep) – Long Island, New York, U.S.A. – Stradford lighthousekeeper = HOAX
1897 (Feb) – Indian Ocean – *Assama* = HOAX
1897 (Jun) – ? – *Albatros* = HOAX
1897 (mid-Jul) – Faî-tsi-long, Vietnam – *Avalanche* = MF
1897? – North Island, New Zealand – ? = ?
1898 (beginning) – Scottish waters – *Dart* = HOAX
1898 (15 Feb) – Faî-tsi-long, Vietnam – *Avalanche* = MF
1898 (24 February) – Faî-tsi-long, Vietnam – *Avalanche* and *Bayard* = MF
1898 (8 Jul) – Sargasso Sea – *Selma* = HOAX
1898 (11 Jul) – Along, Vietnam – *Vauban* = MF
1898 (Oct) – Stonehaven, Kincardine, Scotland – *Lily* = ?Dolphin with two dorsal fins
1898? – Timaru, South Island, New Zealand – ? = ?
1898? – Timaru, South Island, New Zealand – C. Howard Tripp = ?LN
1899 (10 May) – 100 miles southeast of New Zealand – *Opana* = Basking sharks
1899 (21 May) – Cape Falcon, Algeria – H.M.S. *Narcissus* = ?Whales ?MF
1900 (Oct) – Cape Naturaliste (Western Australia) – *Nemesis* = ?HOAX ?SE
1900 (Oct) – Fremantle, Western Australia – *Perth* = ?HOAX ?SE
1900 (soon after) – Loch Scavaig, Skye, Scotland – Sandy Campbell, etc. = LN
1900 (soon after) – Rhum, Scotland – Two men = LN
1901 – Fernando de Noronha, Brazil – C. H. Prodgers = ?
1901 (May) – Between New York and Belem – *Grangense* = ?MS
1902 (13 Jul) – Ram Head, Victoria, Australia – *Chillagoe* = MF
1902 (4 Aug) – Oslofjord, Norway – *Tonny* = LN
1902 (28 Oct) – Tropical Atlantic, latitude of Congo – *Fort Salisbury* = HOAX
1903 (30 May) – South of Cape Hatteras – *Tresco* = HOAX
1903 (30 May) – Scalloway, Shetland – *Adelong* = Basking sharks
1903 (summer) – Montrose, Angus, Scotland – *Rosa* = ?LN ?SE
1903 – Wood Island, Maine, U.S.A. – Several ladies = ?
1903 (beginning Aug) – Fiji Islands – ? = ?
1903 (9 Sep) – North Sea – *Glengrant* = HOAX
1903 (3 Oct) – Shetlands – J. M. Robertson, etc. = Basking sharks
1903 (17 Oct) – Symbister, Shetland – J. R. Anderson, etc. = Basking sharks
1903 (Dec) – Tourane, Vietnam – *Charles-Hardouin* = MF

1903 (end Dec) – Along, Vietnam – *Gueydon* = MF
1903 – Hermanus, Cape Province, South Africa – Fishermen = ME
1903 – Hawston, Cape Province, South Africa – ? = ?
1904 (12 Feb) – Along, Vietnam – *Château-Renault* = MF
1904 (25 Feb) – Along, Vietnam – *La Décidée* = MF
1904 (Mar) – Along, Vietnam – *Gueydon* = MF
1904 (Jul) – Katwijk, Netherlands – P. W. Deems = LN
1904 (22 Oct) – Bab-el-Mandeb Strait – *Ambon* = ?MS ?MH
1905 (13 Apr) – Cape Horn – *Rhône* = LN
1905 (5 Aug) – Wood Island, Maine, U.S.A. – General H. C. Merriam = ?LN ?SE
1905 (7 Dec) – Paraiba, Brazil – *Valhalla* = SE
1905 – Fernando de Noronha, Brazil – C. H. Prodgers = ?
1906 (before) – Zandvoort, Netherlands – C. J. de B. = LN
1906 (7 Jun) – Zandvoort, Netherlands – Some workmen = ?LN ?SE
1906 (Jul) – Katwijk, Netherlands – F. J. Knoops = LN
1906 (31 Jul) – Berry Head, Devon, England – A. J. Butler = Ribbon-like fish
1906 (Aug) – Land's End, Cornwall – *St Andrew* = ?LN ?SE
1906 (15 Oct) – Gulf of Oman – *Java* = ?MS ?MH
1906 (Dec) – Saltsjöbaden, Sweden – Victor Ankarcrona = LN
1907 (Mar) – Tenby, Pembroke, Wales – Fishermen = HOAX
1907 (26 Apr) – Galley Head, Cork, Ireland – *Campania* = LN
1907 (Apr) – Bristol Channel, Somerset, England – M'Naughton = ?LN
1907 (Apr) – Padstow, Cornwall – Mrs J. C. Adkins, etc. = LN
1907 (7 Aug) – Katwijk, Netherlands – P. W. Deems = LN
1907 (summer) – Celebes Sea – *Taiyuan* = ?Python ?YB ?SE
1907 (summer) – Surabaya, Java – Several Englishmen = ?LN ?SE
1907 (8 Sep) – Gulf of Oman – *Vondel* = ?LN ?SE
1907 (Sep) – Tintagel Head, Cornwall – 2 students = ?Oarfish ?SE
1907 (Oct) – Porto, Corsica – Calvi fishermen = ?SE
1908 – Sognefjord, Sogne, Norway – Dutch tourist = ?LN ?SE
1908 (Jun) – Along, Vietnam – *Hanoi* = MF
1909? – ? – *Sultan* = ?LN ?SE
1908–1910? – Between Isle of Man and Ireland – H.M.S. *Caesar* = ?LN ?ME
1910 – Connemara, Ireland – Howard St George, etc. = ?LN ?ME
1910 (Jun) – Rathlin Island, Antrim, Ireland – *Felix* = ?
1910 (Aug) – Mozambique Channel – Captain Le Lièvre = ?
1910 (Aug) – Meil Bay, Orkneys – W. J. Hutchinson, etc. = LN
1910 (13 Dec) – North Atlantic, latitude of Brittany – *Potsdam* = LN
1910? – Ingöy, Finmark, Norway – R. Eliassen = ?SO
1911 (summer) – Saint-Quay-Portrieux, Côtes-du-Nord, France – F. Gélard, etc. = LN
1911 (19 Aug) – North Atlantic, latitude of Brittany – *Amsteldijk* = LN
1911 (Aug) – Wee Cumbrae, Firth of Clyde, Scotland – A visitor = HOAX
1911? – Westward Ho!, Devon, England – William T. Cook, etc. = ?SE
1912 – St Margaret's Bay, Kent, England – Stone, etc. = ?LN ?MH ?SE
1912 (spring) – Cape Matapan, Greece – *Queen Eleanor* = SE
1912 (Jul) – Lowestoft, Suffolk, England – Rider Haggard's daughters = LN
1912 (5 Jul) – Prawle Point, Devon, England – *Kaiserin Augusta Victoria* = SE
1912 (Aug) – Vancouver Island, British Columbia – Mrs H. Forbes = ?ME
1912 (11 Oct) – Jeffreys Bay, Cape Province, South Africa – Robert Murray, etc. = ?Python
1912 (17 Oct) – Gulf of Guinea – *Dover Castle* = ?LN ?SE
1912–1913? (summer) – Portland, Maine, U.S.A. – Mrs F. W. Saunderson = LN
1913 (before) – Ashton on the Clyde, Scotland – A. H. Vincent = ?HOAX ?SE
1913 (20 Apr) – Macquarie, Tasmania – Oscar Davies, etc. = LN
1913 (30 Aug) – Grand Bank, Newfoundland – *Corinthian* = ME
1913 (Oct) – North Sea – *Saint-Yves* = Toothed whale
1913? – Arabian Sea – John Scott Hughes = ?LN

1914 (Jun–Jul?) – Ofotfjord, Nordland, Norway – W. E. Parkin, etc. = ?SO
1915 (30 Jul) – French Atlantic coast – *U 28* = MS
1916 (May or Jun) – Thasos, Greece – E. Plessis = ?LN
1916 (22 Jul) – Guiana – P. W. = Whale
1914–1919? – San Clemente, California, U.S.A. – Ralph Bandini, etc. = ?ME
1917 (22 May) – South-east of Iceland – H.M.S. *Hilary* = ?MH
1917 (summer) – Loch Brittle, Skye, Scotland – father of R. and H. Macdonald = LN
1917 (24 Nov) – Macassar Strait – *Hazenwind* = Oarfish
1918 (28 Jul) – North Sea – *U 108* = MS
1919 (5 Aug?) – Hoy, Orkneys – J. Mackintosh Bell = LN
1920 (20 Apr) – St Paul's Rocks, equatorial Atlantic – *Tyne* = LN
1920 (Jul) – Miami – Fort Lauderdale, Florida, U.S.A. – *Craigsmere* = MF
1920 (Sep) – San Clemente, California, U.S.A. – Ralph Bandini, etc. = ME
1921 (Oct) – Back Bay, Bombay, India – Anonymous = ?Python ?FT
1922 (31 Oct) – Ceylon – *Bali* = ?LN ?SE
1923 (11 Feb) – Somalia – *Mapia* = ?MF
1923 (19 Jun) – Loyalty Islands – *Pacifique* = ME
1923 (Aug) – Herm, Channel Islands – Mrs Bromley, etc. = ?ME ?LN
1923 (summer) – Black Deep, Thames, England – H.M.S. *Kellett* = LN
1923 (22 Sep) – Nouméa, New Caledonia – Two native woman (Fels and friend) = ME
1923 (30 Sep) – Nouméa, New Caledonia – Bailly = ?ME+*Architeuthis*
1923 (30 Oct) – Costa Rica – *India* = ?LN ?SE
1924 (before) – Tuamotus – *Noidore* = ME
1924 (6 May) – Ajaccio, Corsica – G. Juranville = ?LN ?SE
1925 (2 Feb) – Port Stephens, New South Wales – *Saint-François-Xavier* = LN
1925 (3 May) – Tropical Atlantic, latitude of Mauritania – *Alcyone* = Oarfish
1925 (23 Jul) – Brisbane, Queensland, Australia – *Bawean* = SE
1925 (before) – Isle of Serpents, South China Sea – A. G. L. Jourdan = ?YB
1925 – Menzies Bay, British Columbia, Canada – Jack Nord, etc. = ME
1925? – North Sea, Lincolnshire, England – *G.F.B.* = LN
1926 (21 Jan) – Tuléar, Madagascar – Dr Georges Petit = ?MF
1926 or 1927 – Great Australian Bight – *City of Manila* = ?
1928 (23 Apr) – Cape Guardafui, Somalia – R.M.S. *Oronsay* = ?LN ?MF
1928 (15 Aug) – Sumatra – *Bengkalis* = LN
1928 (autumn) – Vancouver Island, British Columbia, Canada – James Murray = ?ME
1928 – Antikythera, Greece – Sir Arthur Conan Doyle, etc. = ?LN
1928? – Isle of Man – Major W. Peer Groves, etc. = ME
1929 (Sep) – New Caledonia – R. Reynell Bellamy = ?LN
1930 (Jun) – Norfolk, England – L. M. Wilkes = ?LN
1930 (Jun) – Bellambi Reef, New South Wales – Fishermen = ?Rorqual
1930 (Jun?) – Scarborough, New South Wales – ? = ?LN ?SE
1930 (Nov) – Cape Town, South Africa – *Dunbar Castle* = LN
1930? – Port Angeles, British Columbia, Canada – 'Rusty' Beetle = ME
1931 (Jun) – Thorpeness, Suffolk, England – Mrs Sibyl Armstrong = ?LN
1931 (28 Jul) – Kilbrannan Sound, Arran, Scotland – Dr Paton = Bladder-nosed seal
1932 – Between Sydney and Durban – *Ceramic* = ?FT
1932 (10 Aug) – Chatham Island, British Columbia, Canada – F. W. Kemp = ME
1933 (before) – Api, New Hebrides – A planter = ME
1933 (before) – Nouméa, New Caledonia – Manager of Messageries Maritimes = ?
1933 (before) – Nouméa, New Caledonia – *Euphrosyne* = ME
1933 (before) – North Cape, North Island, New Zealand – Capt. J. Munroe = ?
1933 (or before) – British Columbia, Canada – *Santa Lucia* = ?ME
1933 (or before) – British Columbia, Canada – *Princess Joan* = ?ME
1933 (or before) – British Columbia, Canada – Capt. W. H. Davies = ?ME
1933 (or before) – British Columbia, Canada – Percy Barnes = ?ME
1933 (7 Jul) – St Lucia Lake, Natal, South Africa – Court, Higgs, etc. = ?SE

1933 (1 Oct) – Chatham Island, B.C., Canada – Major W. H. Langley = ?ME
1933 (4 Oct) – Chatham Island, B.C., Canada – R. C. Ross – ?ME
1933? (Apr) – Indian Ocean? – *Chitral* = LN
1934 (25 or 26 Jan) – Querqueville, Manche, France – Skipper of tug 117 – ?LN
1934 (30 Jan) – St Eustatius, Lesser Antilles – *Mauretania* – ?LN ?MH
1934 (2 Feb) – La Guaira, Venezuela – *Mauretania* – Giant ray
1934 (28 Feb) – Filey Brig, Yorkshire, England – Wilkinson Herbert = LN
1934 (Mar) – Nassau, Bahamas – *Mauretania* = MF
1934 (Jul) – Azores – *Cuba* = LN
1934 (?11 Aug) – Mourilyan, Queensland, Australia – Fishermen = ?
1934 (18 Aug) – Townsville, Queensland, Australia – Oscar Swanson, etc. = ??
1934 (?25 Aug) – Bowen, Queensland, Australia – Hurst, etc. = ?MF
1934 (after 25 Aug) – Townsville, Queensland, Australia – 3 fishing parties = ?MF
1934 (Sep) – Mackay, Queensland, Australia – *Trentbank* = ?
1934 (Sep) – Great Barrier Reef, Queensland, Australia – *Rehata* = ??
1934 (3 Nov) – Campbeltown Loch, Kintyre, Scotland – MacCorkindale = Oarfish
1934 – Vineyard Sound, Mass., U.S.A. – Thomas Ratcliffe, etc. = ?SE
1934 – Largs Bay, Gulf of Aden – A dozen people = ?
1934 – Pender Island, B.C., Canada – Cyril B. Andrews = ?ME
1935 – Governor's Island, New York, U.S.A. – *General Charles Humphreys* = Python
1935 – Norfolk, Virginia, U.S.A. – *Electra* = MF
1935? – San Francisco, California, U.S.A. – ? = ?
1936 (5 Aug) – Eccles, Norfolk, England – H. E. Witard, etc. = ?LN ?Flight of birds
1937 (26 Oct) – St Thomas, Virgin Islands – *Amerika* = LN
1937 – Nantucket, Mass., U.S.A. – Edward Crocker, etc. = HOAX
1937 – Sunset Beach, B.C., Canada – C. Timeus, etc. = Sea-elephant
1937 – Sunset Beach, B.C., Canada – F. B. Lawrence, etc. = ?ME
1937 or 1938 – Trusthorpe, Lincolnshire, England – R. W. Midgley = ?MH ?SE
1938 – Easington, Yorkshire, England – Mrs Joan Borgeest = ME
1938 (21 Oct) – Southwold, Suffolk, England – Ernest Watson, etc. = LN
1939 (before 15 Mar) – Strömstad, Sweden – Edwin Hansson, etc. = Pinniped
1939 (summer) – Étables, Côtes-du-Nord, France – A. F. Waymark, etc. = ?LN
1939 (Jul) – Firth of Forth, Scotland – Fishermen, etc. = ME
1939 – Astoria, Oregon, U.S.A. – Fishing crews = ?ME
1939–1940? – North Sydney, Nova Scotia, Canada – Charles Ballard, etc. = ?SE
1941 – Mooloolabak, Queensland, Australia – Two fishermen = ?Oarfish ?ME
1942 (Apr) – Estevan Point, Vancouver Island, B.C., Canada – ? = ?ME
1943 (Mar) – St Andrew's Bay, Florida, U.S.A. – Thomas Helm = ME
1943 – Vancouver Island, B.C., Canada – Ernest Lee = ?ME
1944 – Gold Coast, Gulf of Guinea – H.M.S. *Buster* = ?SE
1945 (Aug) – Hilston, Yorkshire, England – B. M. Baylis = MH
1945 – Ouengho Bay, Canala, New Caledonia – A. Fèré, etc. = LN
1946 (7 Nov) – Cape San Martin, California, U.S.A. – Many witnesses = ??
1946? – Queen Charlotte Islands, British Columbia – Capt. House = LN
1946–1947? – Gower Peninsula, Wales – A. G. Thompson = ME
1927–1947 – Monterey Bay, California – Local fishermen = ?
1947 (Mar) – Vancouver, British Columbia – Peter Pantages, etc. = ME
1947 (Apr) – Security Bay, Alaska, U.S.A. – *Suntrana* = ?ME
1947 (Apr) – Tiger Rocks, Natal, South Africa – Merebank inhabitant = ?
1947 (8 May) – Pennock Isle, Alaska – Lauri Carlson, etc. = ?ME
1947 (Aug–Sep) – Durban, Natal, South Africa – *Harry Cheadle* = ME
1947 (Aug–Sep) – Durban, Natal, South Africa – *Panther* = HOAX
1947 (Sep) – Isipingo, Natal, South Africa – J. Kennedy = ME
1947 (4 Sep) – Boston, Mass., U.S.A. – John Ruhl = MH
1947 (Nov) – Vancouver Island, British Columbia – G. W. Saggers = ME
1947 (30 Dec) – North Carolina, U.S.A. – *Santa Clara* = ?LN ?SE

1948 (Dec) – Kilindini, Mombasa, Kenya – J. Somerville, etc. — ?
1948 (Dec) – Kilindini, Mombasa, Kenya – K. A. Streets = ?
1948 (Dec) – Kilindini, Mombasa, Kenya – 16 Europeans = ?
1949 (9 Feb) – Kilindini, Mombasa, Kenya – E. C. A. Hynes = ?
1949 (end Feb) – Kilindini, Mombasa, Kenya – 4 bathers = ?
1950 (5 Feb) – Vancouver Island, British Columbia – Judge J. T. Brown, etc. = ?ME ?LN
1950 (summer) – Cliftonville, Kent, England – John Handley = LN
1950 (Dec) – Summerland, California, U.S.A. – Opal Lambert = ?ME
1951 (Apr) – Qualicum, British Columbia – C. Charlton, etc. = HOAX
1952 (Jan) – Umzinto, Natal, South Africa – Gerald Pemberton, etc. = ?Python
1952 (Mar) – Pepson, South Korea – ? = ?
1952–1954? (Sep) – Azores – *Discovery* = Sunfish
1953 (13 Feb) – Qualicum, British Columbia – Frank Waterfall, etc. = ?LN
1953 (8 Jun) – San Clemente, California, U.S.A. – Sam Randazzo, etc. = ?ME
1953 (Aug) – Firth of Clyde, Ayrshire, Scotland – Fishermen = ?LN ?ME
1953 – Straits of Messina, Sicily – ? = ?
1954 (24 Feb) – Vancouver Island, B.C., Canada – People from Nanaimo = ?ME
1954 (25 Feb) – Vancouver Island, B.C., Canada – W. Baldwin, etc. = ?ME
1954 (21 Jul) – Loch Linnhe, Argyllshire, Scotland – Eric Robinson = ?LN
1954 (Oct) – Newport Beach, California, U.S.A. – *Sea Fern* = HOAX
1954 (after Oct) – La Jolla, California, U.S.A. – Phil Parker, etc. = ??
1955 – Darwin, Northern Territory, Australia – Two women = Giant ray
1956 (6 Jun) – Nova Scotia, Canada – *Rhapsody* = ?FT
1957 – Massachusetts, U.S.A. – *Noreen* = ?MH ?LN
1958 (Feb) – Rio de Janeiro, Brazil – Ferreira de Rocha, etc. = ?LN
1958 (29 Apr) – Puget Sound, Washington, U.S.A. – Rev. J. Oosterhoff = ?ME
1958 (Aug) – Grillonne, Calabria, Italy – Tourists = SE
1958 (Aug) – East London, South Africa – *Golden Flame* = ?ME
1959 (19 Jul) – Vancouver Island, B.C. – Cameron family = ?Oarfish ?LN
1959 (13 Sep) – Soay, Hebrides – Tex Geddes, etc. = ?FT ?ME
1959 (Oct) – Darwin, Northern Territory, Australia – Alan Carter, etc. = Giant ray
1959 (Nov) – Durban, Natal – *Congella* = Whales
1959 (9 Dec) – Durban, Natal – Dr Greissing, etc. = Whales
1960 (1 Jan) – Brisbane, Queensland, Australia – Ron Spencer, etc. = ?ME
1960 (Jan) – Brisbane, Queensland, Australia – Nigel Tutt, etc. = ?ME
1960 (7 Aug) – Skegness, Lincolnshire, England – Ray Handsley, etc. = Flight of birds
1960 (14 Aug) – Skegness, Lincolnshire, England – P. North, etc. = Flight of birds
1960 (26 Dec) – Sidney, British Columbia – A couple = ?ME ?LN
1961 (before) – North Cape, Finmark, Norway – *Johan Hjort* = ?LN ?SE
1962 (1 Feb) – Helensburgh, Scotland – Jack Hay = LN
1962 (13 Feb) – Vancouver Island, British Columbia – Alan Maclean, etc. = ?ME
1962 (24 Mar) – Pensacola, Florida, U.S.A. – E. B. McCleary = ?HOAX ??
1962 – Brisbane, Queensland, Australia – James Kentworth = ?
1962 (Sep) – Bribie Island, Queensland, Australia – R. Duncan = LN
1962 (9 Oct) – Bribie Island, Queensland, Australia – R. Duncan = LN
1962 (28 Dec) – Vancouver Islanb, British Columbia – R. Guy, etc. = ME
1963 (13 Feb) – Vopnafjörthur, Iceland – A. and S. Jonsson = ?MH ?FT
1964 (12 May) – Nantucket, Mass., U.S.A. – *Blue Sea* = ?MH
1964 (May) – Nantucket, Mass., U.S.A. – *Friendship* = ?MH
1964 (May–Jun) – Mouth of Grand Rhône, France – J. Borelli and son = ?LN ?SE
1964 (early Jun) – Jura, Hebrides – Neil and Lily MacInnes = ?ME ?MH
1964 (12 Dec) – Hook Island, Whitsundays, Australia – Le Serrec = HOAX
1966 (early summer) – Winthorpe, Lincolnshire, England – John Hayes = ?
1966 (25 Jul) – Mid-North Atlantic – *English Rose III* = ?LN ?SE
1966 (mid-Oct) – Skegness, Lincolnshire, England – George and May Ashton = MH

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Chronological Table of Strandings and Captures

Of large sea animals which were thought to have been, or could have been, sea-serpents[1]

1648 – Santa Maria del Mar, Oaxaca, Mexico – Inhabitants of a pueblo – ?Whale
1720 – Kobbervueg, Rogaland, Norway – Thorlack Thorlacksen – ?*Architeuthis*
1753 (before) – Amund, Nordfjord, Norway – ? = ?
1753 (before) – Karmen Island, Norway – ? = ?
1808 (Sep) – Stronsay, Orkneys – ? = Giant basking shark or unknown shark
1822 (Jun) – Raritan Bay, New Jersey, U.S.A. – ? = Basking shark
1848 (about) – Firth of Forth, Scotland – *Sovereign* – Oarfish
1849 – Usan, Scotland – Fishermen – Nemertean worm, *Lineus longissimus*
1849 (26 Mar) – Cullercoats, Northumberland, England – Fishermen = Oarfish
1860 (22 Jan) – Hungary Bay, Bermuda – Trimingham = Oarfish
1863 (2 Aug) – Sungyce, Fou-Kien, China – *Beaver* = Unknown shark
1864 (before) – St Margaret's Bay, Nova Scotia, Canada – A lady = ?
1876 (before) – Northumberland, England – ? = Oarfish
1878 – Tasmania, Australia – ? = Oarfish
1880 – New Harbor, Maine, U.S.A. – Capt. S. W. Hanna – Unknown shark
1883 – Moeraki, near Otago, South Island, New Zealand – ? = Oarfish
1883 (Mar) – Queensland, Australia – ? = ?Whale
1883 – Coast of Annam – Tran Van Con = ?
1885 – New River Inlet, Florida, U.S.A. – Gordon = ?Unidentified selachian
1887 – Cape May, New Jersey, U.S.A. – ? = ?
1891 (beginning Nov) – Coffin Bay, Australia – Bishop Kennion? = HOAX
1894 – Kirkwall, Orkneys, Scotland – ? = Basking shark
1896 (Aug) – Carabelle, Florida, U.S.A. – *Crescent City* – Unknown shark

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[1] Some cases have not been mentioned in the text, because they were quickly explained and would only have cluttered the dossier, but I have listed them here for those who may come across them and not know how they turned out.

1899 (spring) – Suwarrow Island, Polynesia – *Emu* = Beaked whale
1901 (22 Feb) – Newport Beach, California, U.S.A. – Horatio Forgy = Oarfish
1903 (?Aug) – Iceland – *Indian* = Oarfish
1906 (20 Mar) – Dungeness, Kent, England – *Tropper* = ?
1906 – Sumbawa, Indonesia – ? = Oarfish
1908 (Jun) – North of Scotland – *Balmedic* = Whale's skull
1921 (Apr) – Jehu Sands, Bombay, India – ? = ?Pilot whale (*Globicephalus*)
1921 (Nov) – Cape May, New Jersey – ? = Baleen whale
1922 (before Oct) – Margate, Natal, South Africa – ? = ?
1928 (7 Jun) – Prah Sands, Cornwall, England – ? = ?Basking shark
1928 – Gulf of Fonseca, San Salvador – ? = ?
1930 (Nov) – Glacier Island, Alaska – ? = ?
1932 (May) – Newfoundland, Canada – ? = ?
1925 (end May) – Santa Cruz, California, U.S.A. – ? = Beaked whale (*Berardius bairdi*)
1934 (end Feb) – Querqueville, France – ? = Basking Shark
1934 (Dec) – Henry Island, British Columbia, Canada – ? = Basking shark
1939 – Provincetown, Mass., U.S.A. – ? = ?
1942 (Jan) – Deepdale Holm and Hunda, Orkneys – ? = Basking sharks
1944 (Sep) – Machrihanish, Kintyre, Scotland – ? = ?
1946 (Oct) – Kenai Peninsula, Alaska – ? = Pacific grampus
1947 (2 Nov) – Effingham, British Columbia, Canada – ? = Basking shark
1950 (beginning Jan) – Suez, Red Sea – ? = Bryde's whale (*Balaenoptera brydei*)
1951 (Feb) – Hendaye, Basses-Pyrénées, France – L. Ducourau = Basking shark
1951 (Jul) – Shuyak Island, Alaska – ? = Cetacean
1953 (before Jun) – Whitburn, Durham, England – ? = Oarfish
1953 (Aug) – Girvan, Ayrshire, Scotland – ? = ?Basking shark
1954 – Bondi, New South Wales, Australia – Keith McRae = Oarfish
1956 (spring) – Yakutak, Alaska – ? = Beaked whale (*Berardius bairdi*)
1960 (24 Mar) – Treasure Island, Florida, U.S.A. – William Kanitz = Oarfish
1960 (before 31 Mar) – New South Wales, Australia – Myrtleford = Basking shark
1961 (21 Mar) – Boulmer, Northumberland, England – ? = Basking shark
1961 (24 Dec) – Saint-Jean-des-Monts, Vendée, France – ? = Basking shark
1963 (9 Jul) – Ile du Levant, Var, France – Étienne Lambaere = Oarfish
1963 (25 Sep) – Malibu Beach, California, U.S.A. – C. Richards = Oarfish
1964 (Dec) – Skaket Beach, Orleans, Mass., U.S.A. – ? = Basking shark

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Note: The abbreviation SS refers to all sea-serpents in the widest possible sense. This Bibliography is intended to be used in conjunction with the Chronological Table. Thus in the reference, 'SS at Golspie, 1873', Golspie is not indexed, but from the Table it will be seen that the witnesses (who are indexed) were Soutar and Joass; and hence the reference in the text may be found.

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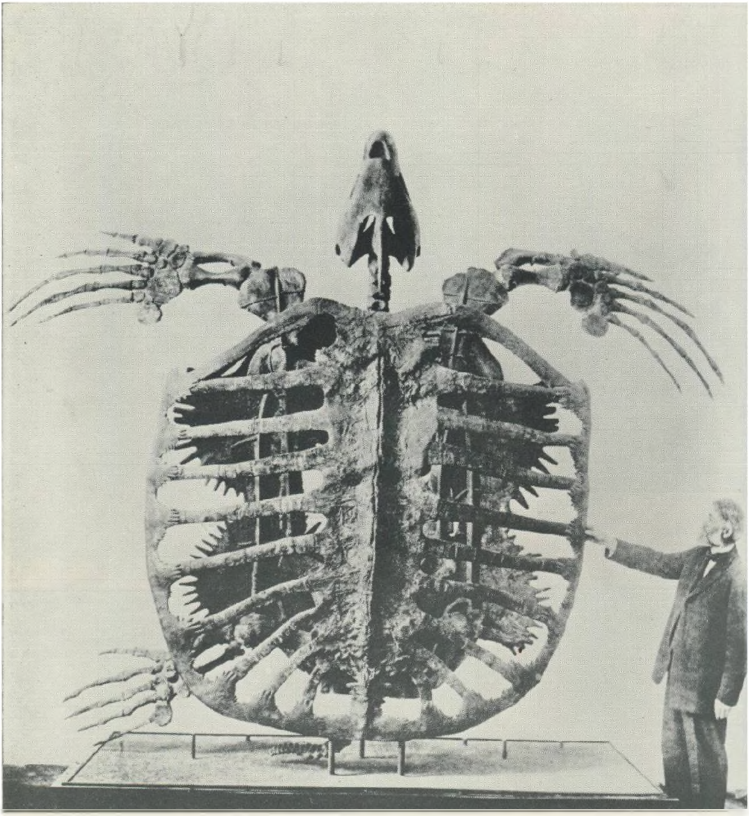
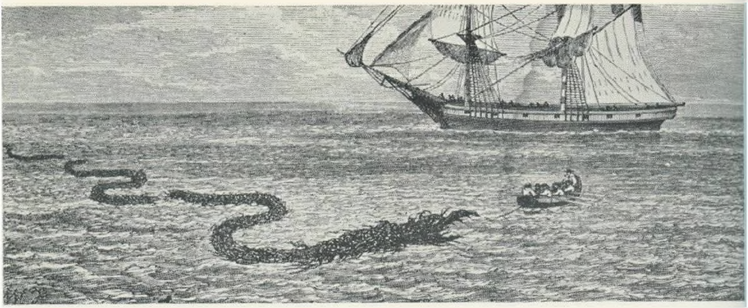
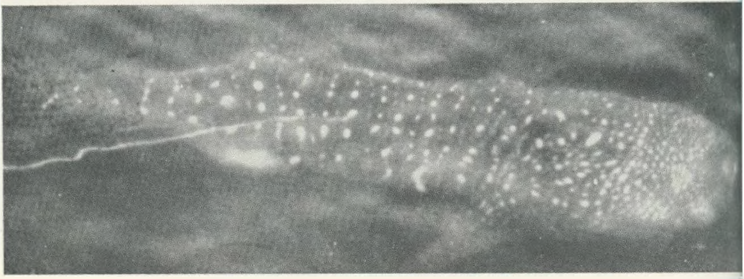


75. *Archelon*

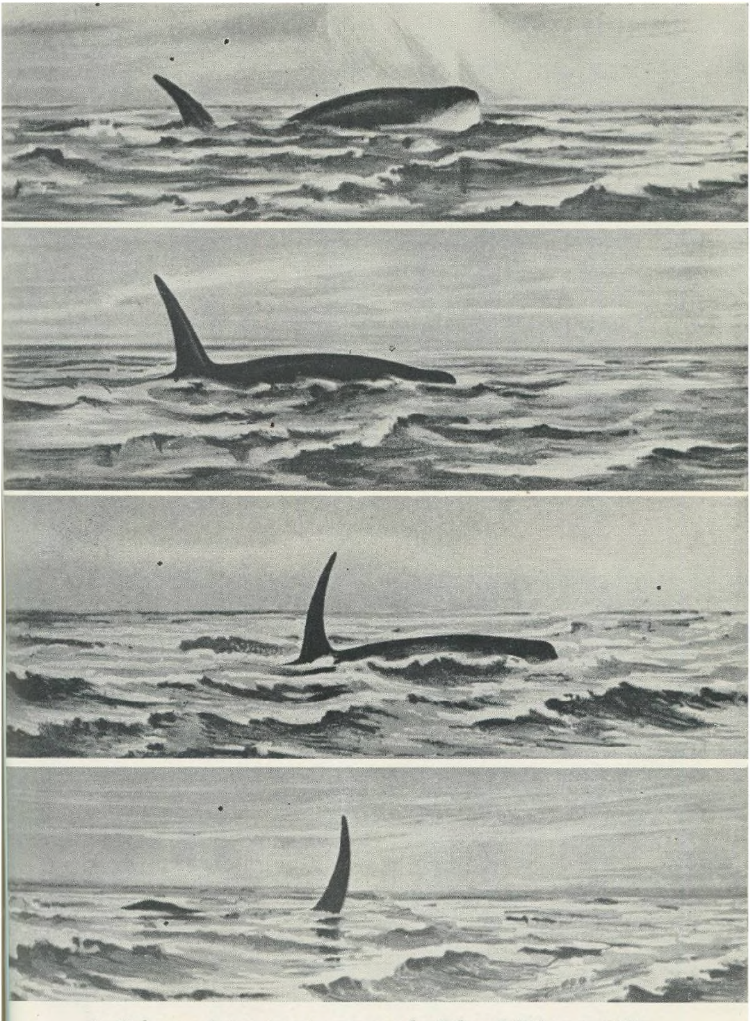


32. Giant seaweed

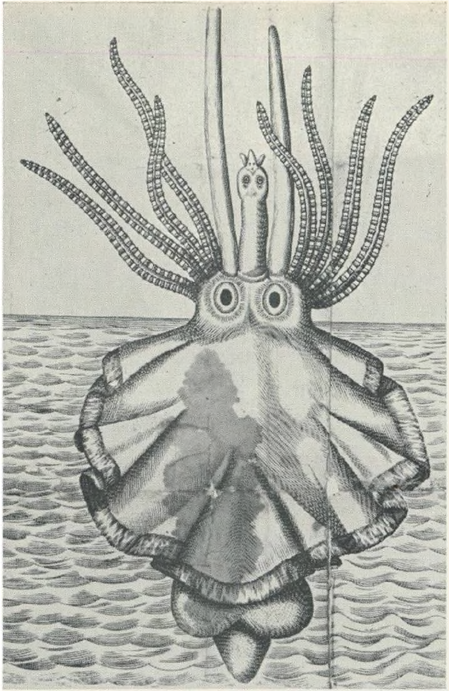
33. Flight of birds near the surface



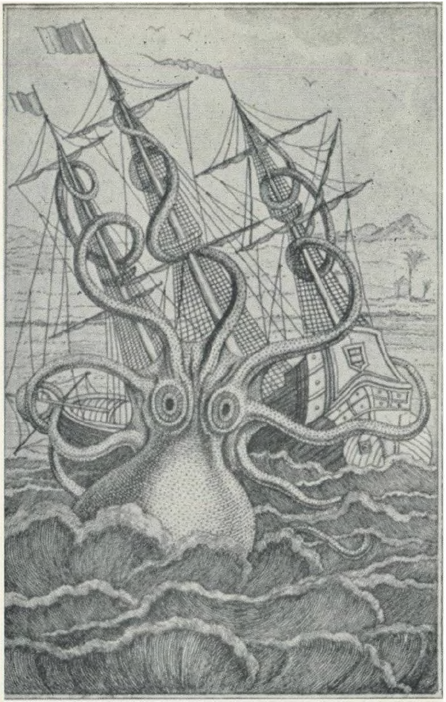
34. Whale-shark



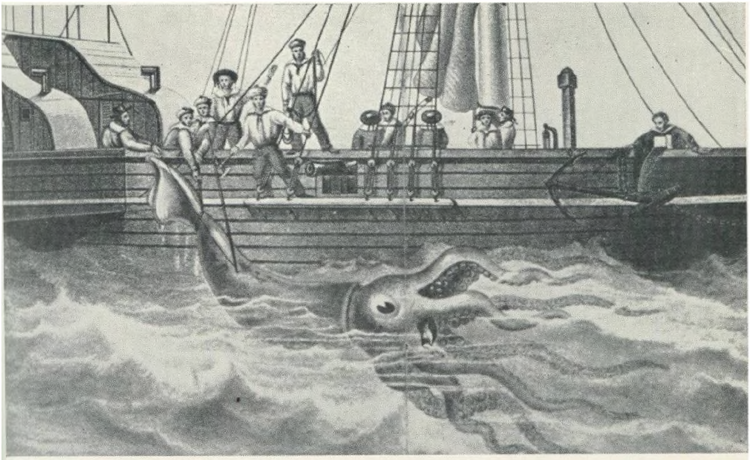
1. Unknown Antarctic cetacean seen by Edward Wilson in 1902



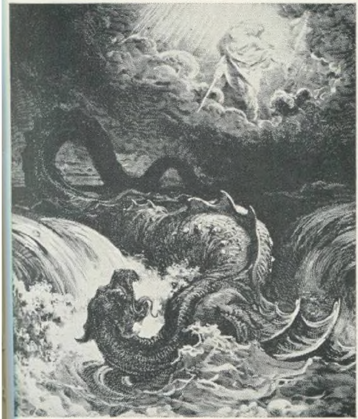
2. The Dingle-I-Cosh squid



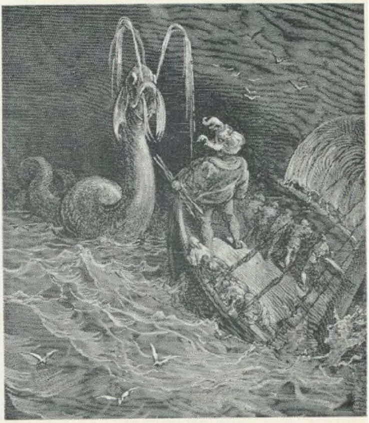
3. Denys de Montfort's 'colossal octopus' on a votive picture at St Malo



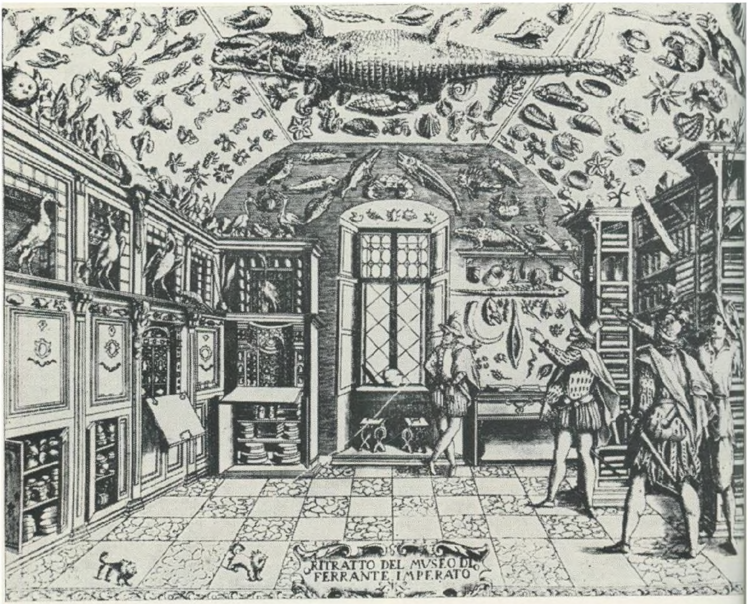
4. The *Alecton's* squid



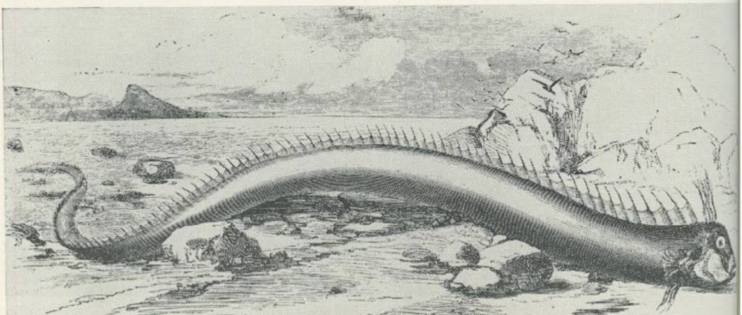
5. Biblical leviathan,
as drawn by Gustave Doré



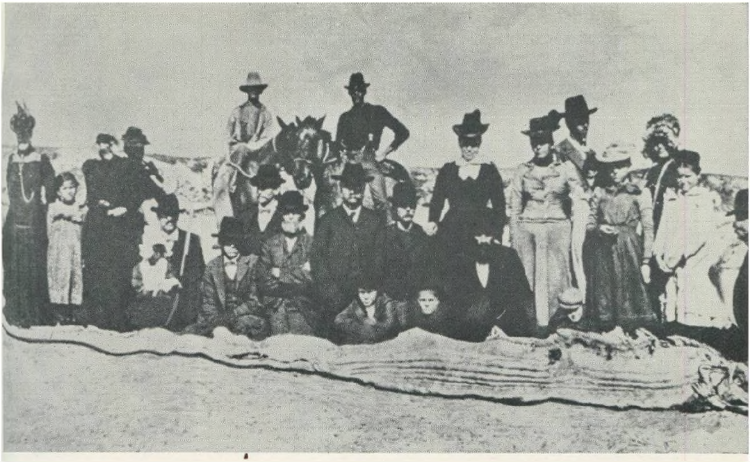
6. Pantagruel's *physeter*,
as drawn by Gustave Doré


RITRATTO DEL MVSEO DI FERRANTE IMPERATO

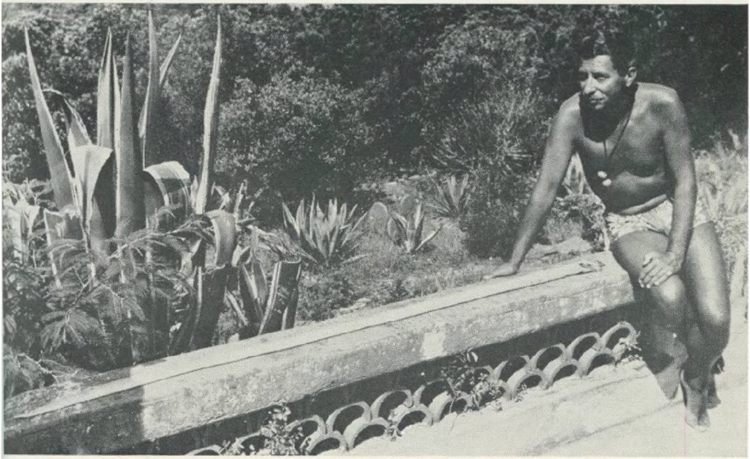
7. Oarfish in Ferrante Imperato's Cabinet of Curiosities, 1599



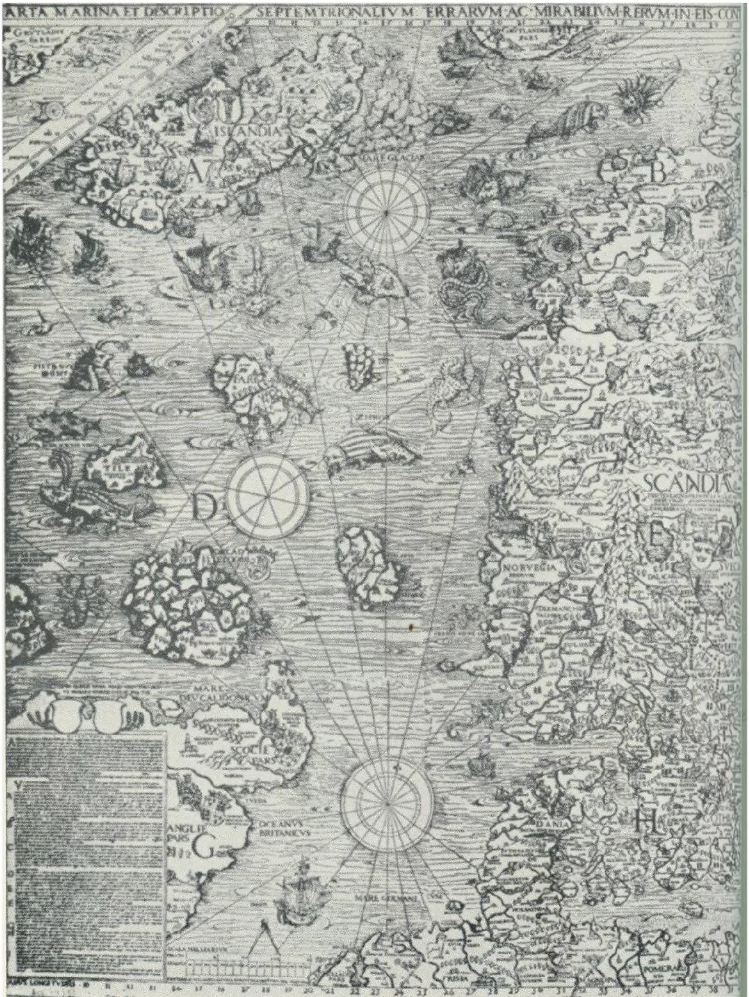
8. Oarfish at Hungary Bay, Bermuda, 1860



9. Oarfish at Newport Beach, 1901



10. Oarfish on the Ile du Levant with the author, 1963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FARE
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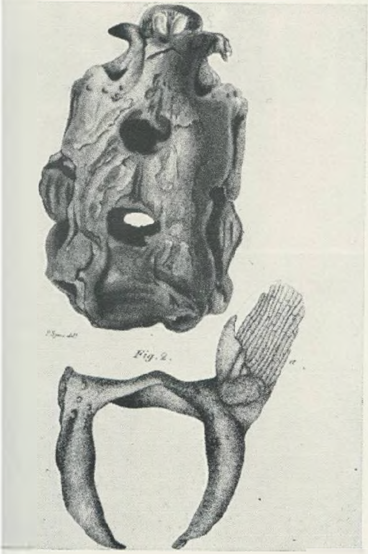
SCANDIA
NORVEGIA
SVECI
MARE DEUCALIDONIV
SCOTIE PARS
ANGLIE PARS
OCEANVS BRITANICVS
MARE GERMANI
DANIA
GOTHI
POMERA

11. Olaus Magnus's map of the northern regions, 1539

12. Bishop Erik
Ludvigsen Pontoppidan



13. Cranium and sternum with fin
of the Stronsa beast, 1808

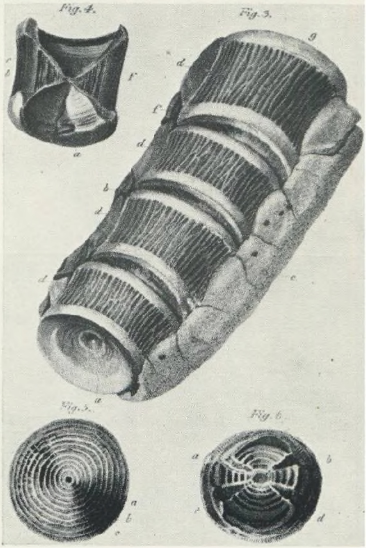


Fig. 4.
Fig. 3.
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Fig. 5.
Fig. 6.
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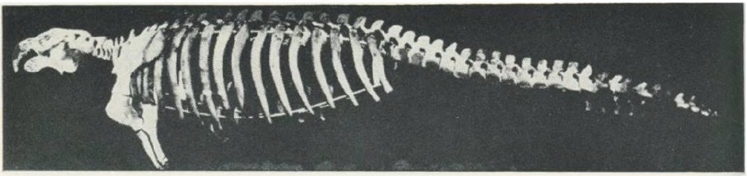
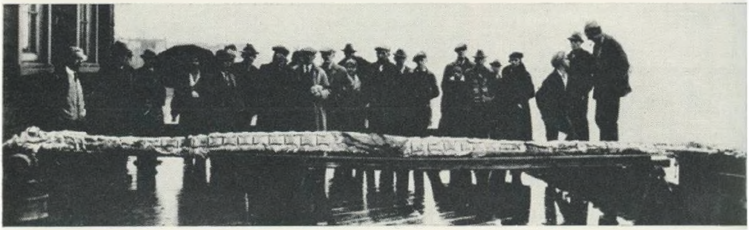
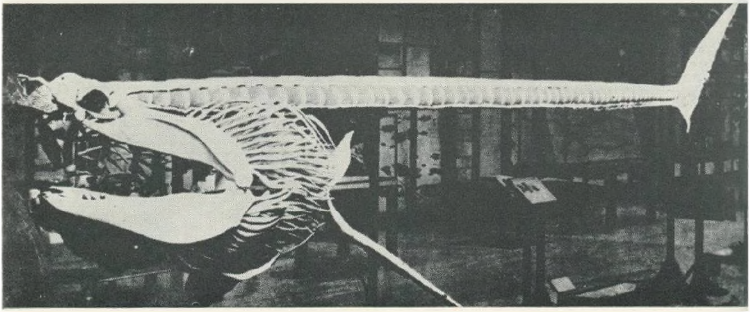
14. Vertebrae of the Stronsa beast, 1808



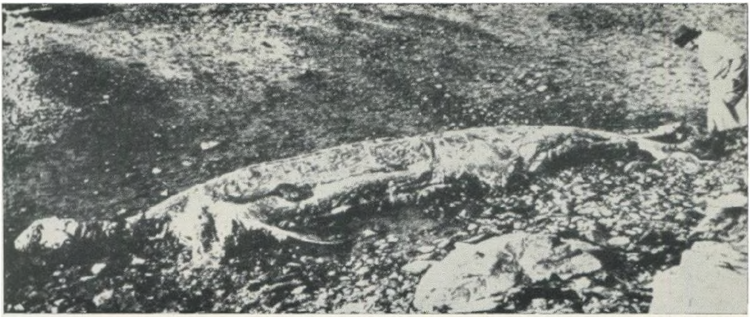
15. Skeleton of Steller's sea-cow



16. Henry Island monster, 1934

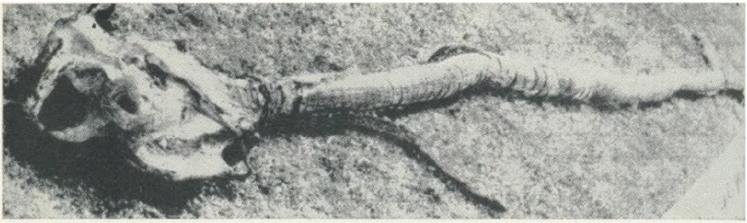


17. Skeleton of basking shark

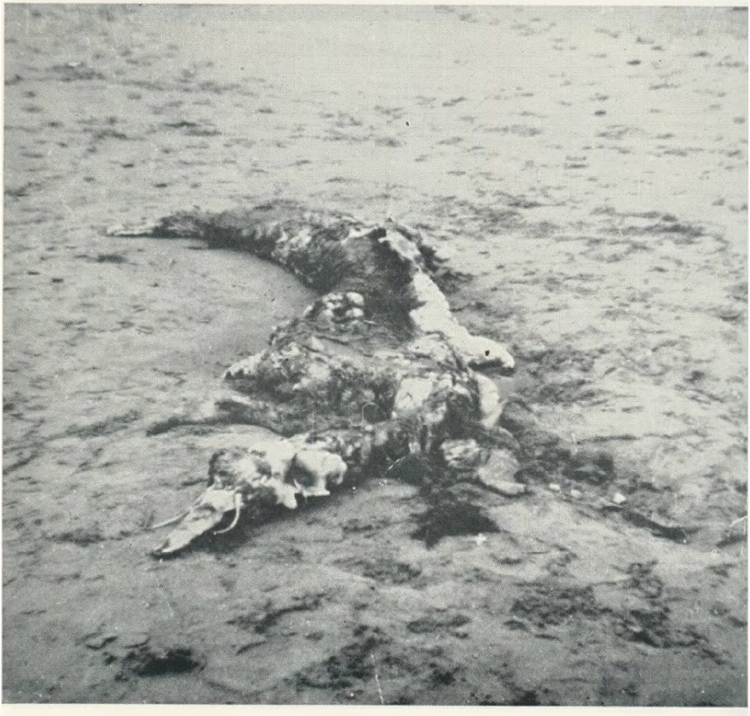


18. Querqueville monster, 1934

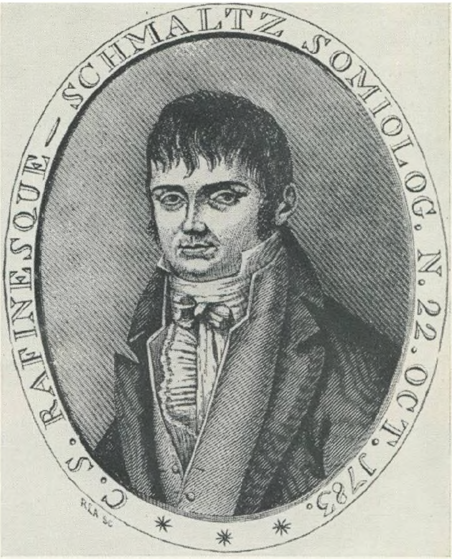
19. 'Neck' of Querqueville monster, 1934



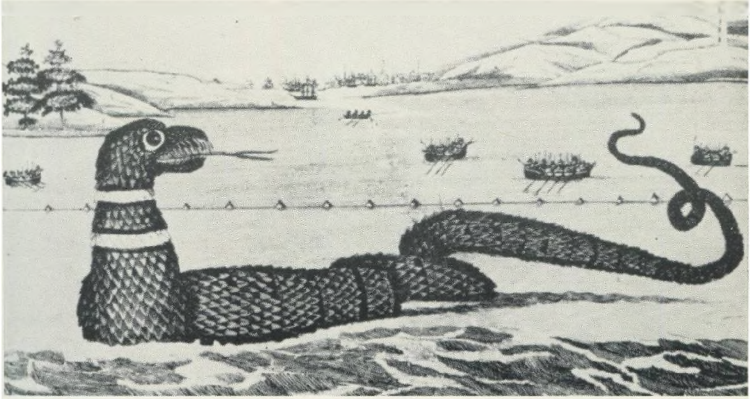
20. New South Wales carcase, 1960



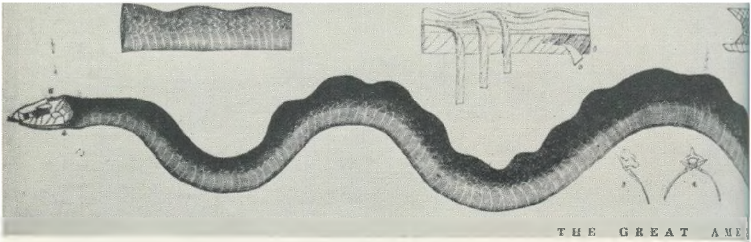
21. Hendaye carcase, 1951


C. S. RAFINESQUE — SCHMALTZ SOMIOLOG. N. 22. OCT. 1783.
R.L.A. SC

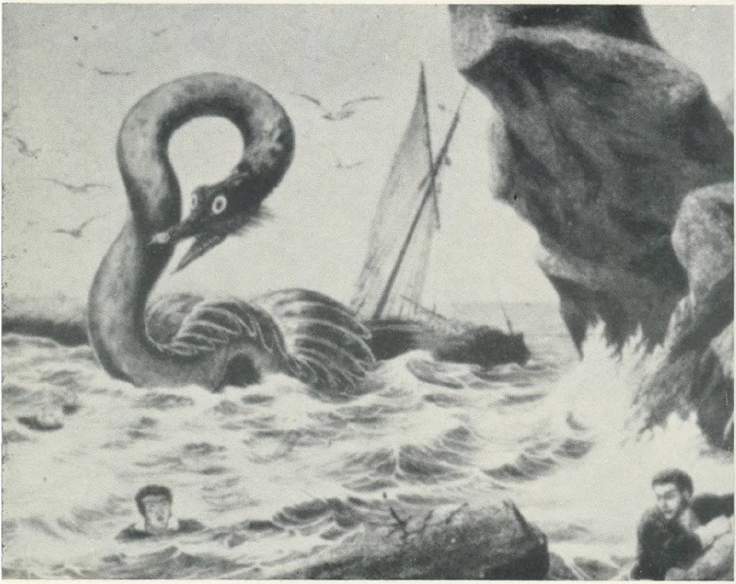
22. Constantin Samuel Rafinesque



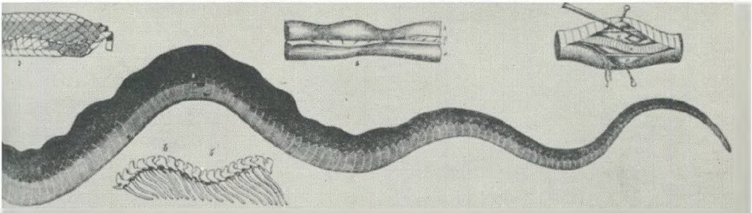
23. Massachusetts sea-serpent, 1817


THE GREAT AME

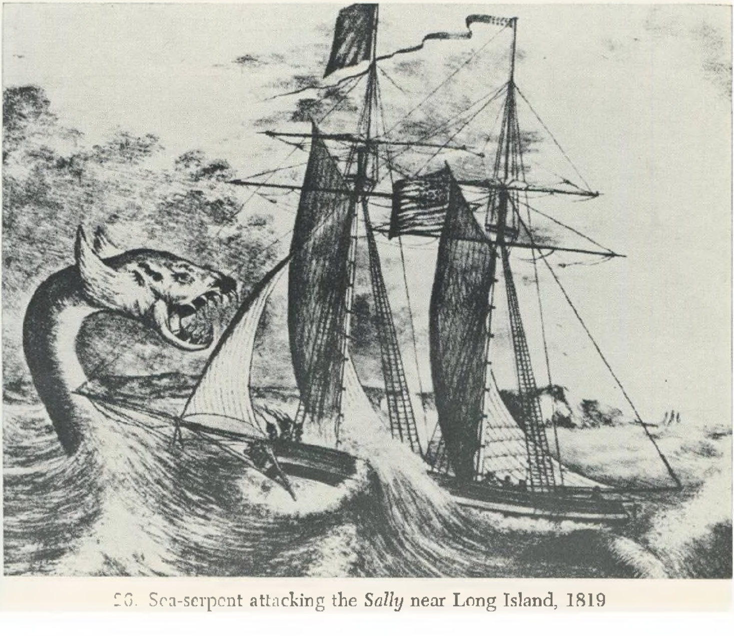
24. *Scoliophis atlanticus*



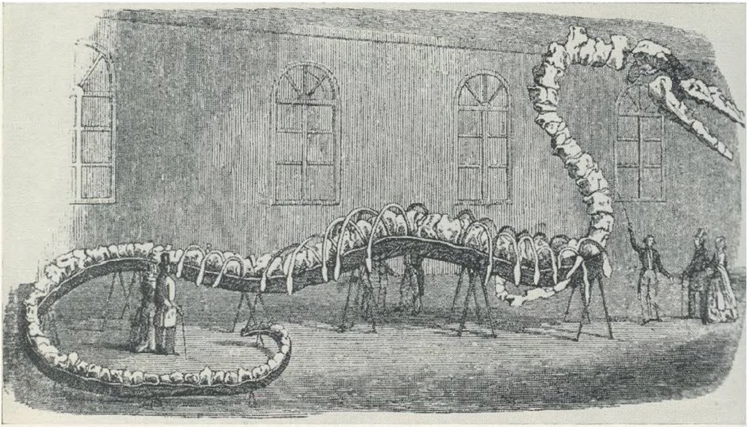
25. Sea-serpent sinking a ship off Massachusetts, 1819



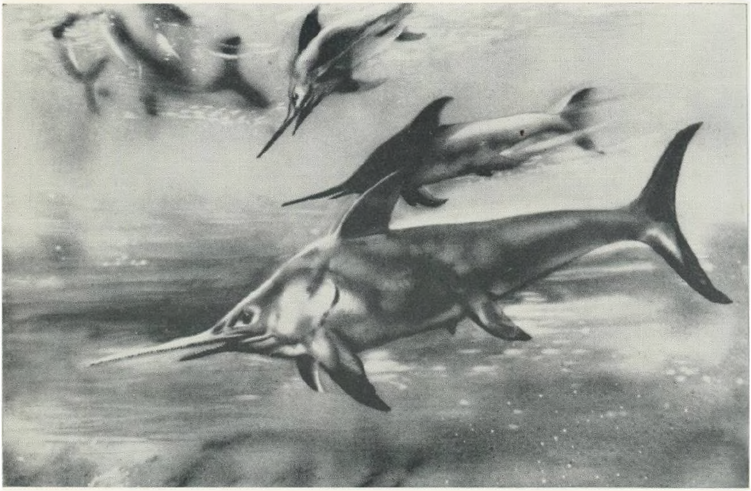
AN SEA-SERPENT.



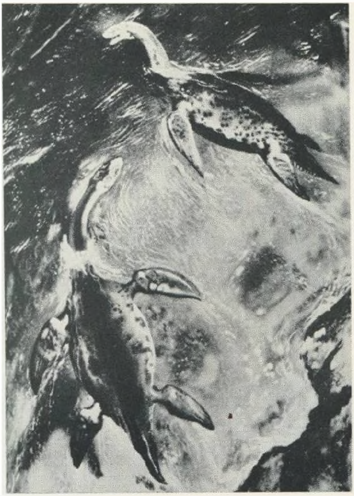
26. Sea-serpent attacking the *Sally* near Long Island, 1819



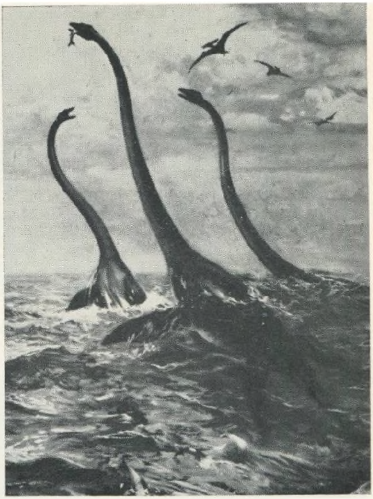
27. Dr. Koch's *Hydrargos sillimanii,* 1845



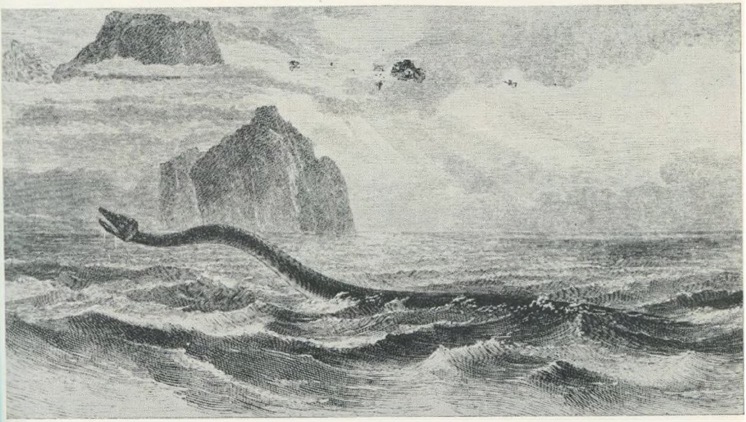
28. Ichthyosaurs by Zdeněk Burian



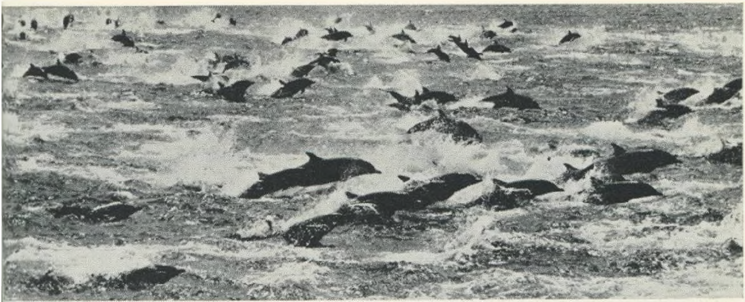
29. Plesiosaurs by Zdenek Burian



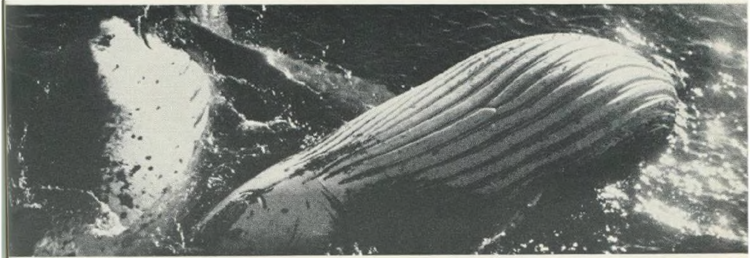
30. Elasmosaurs by Zdenek Burian



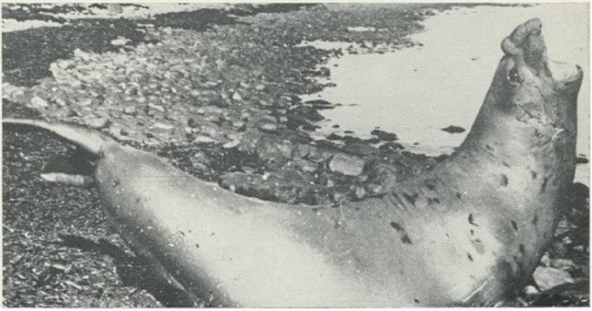
31. Philip H. Gosse's enaliosaurian sea-serpent, 1860



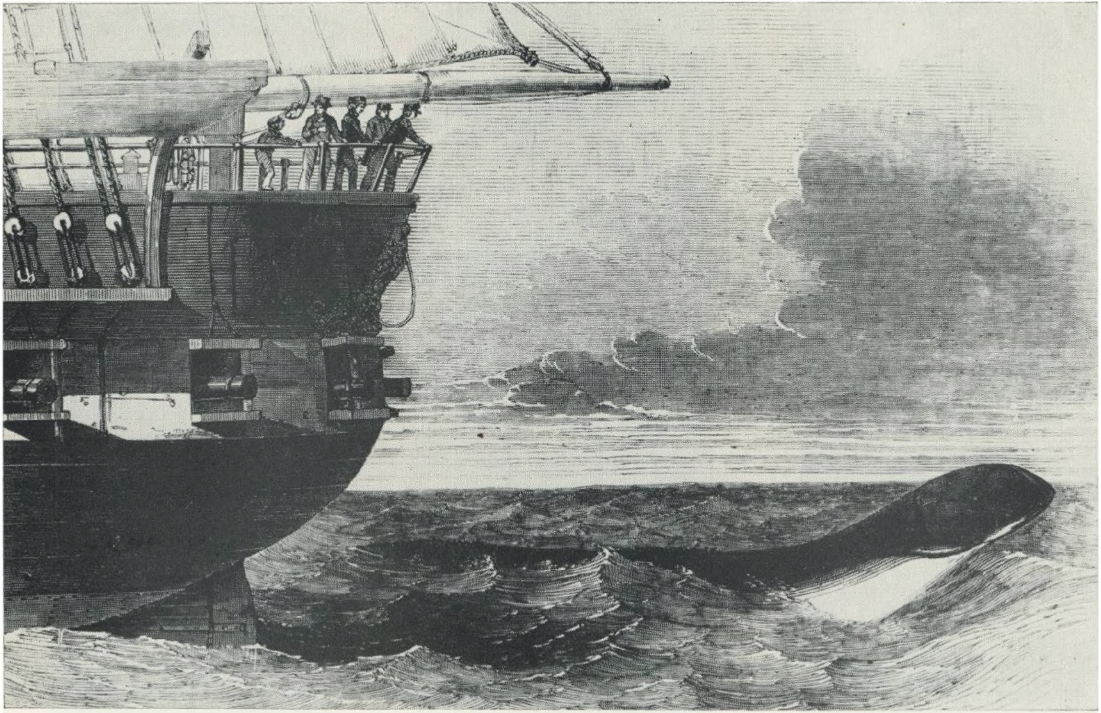
35. Row of dolphins



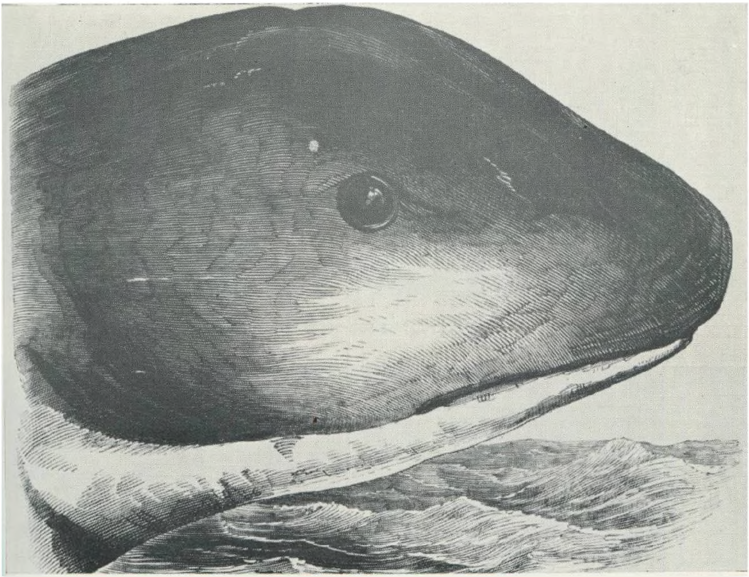
36. Rorqual floating belly upwards



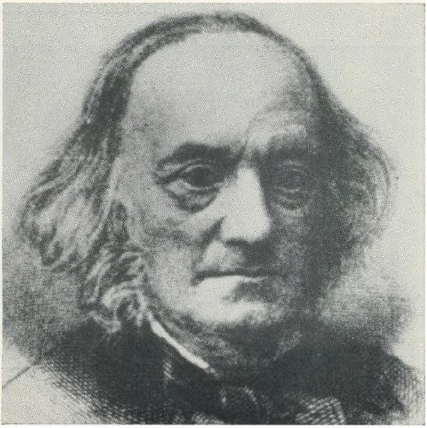
7. Sea-elephant



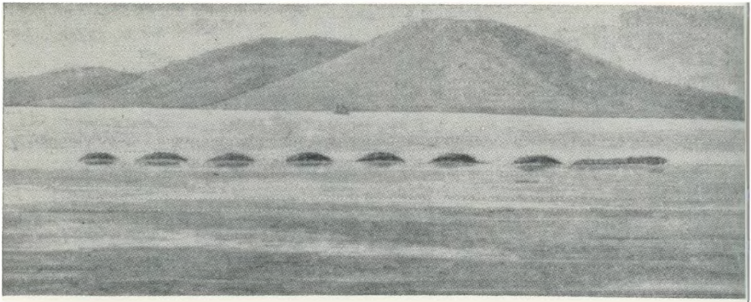
38. The *Daedalus* sea-serpent, 1848



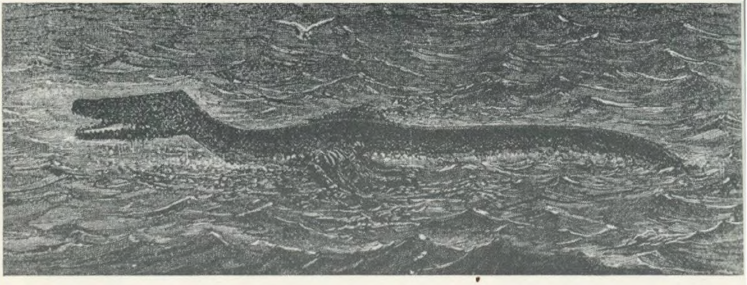
39. Details of its head



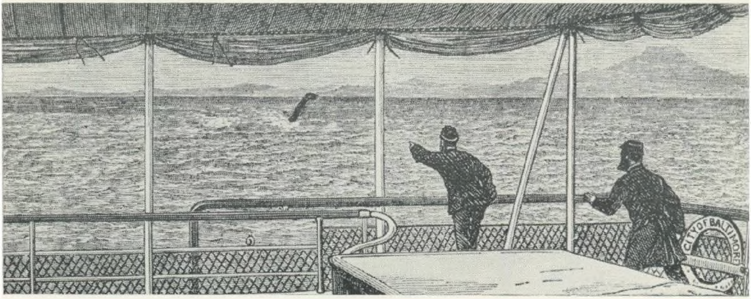
40. Its worst enemy,
Sir Richard Owen



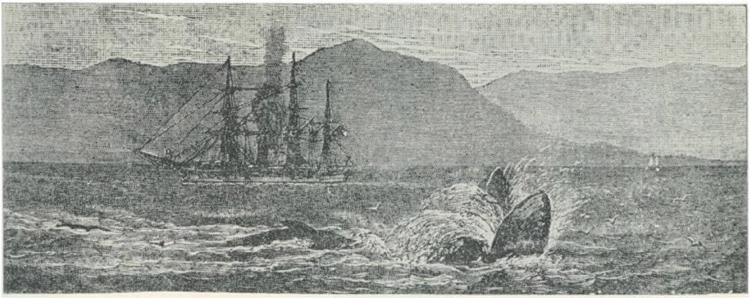
41. The *Leda* sea-serpent, 1872



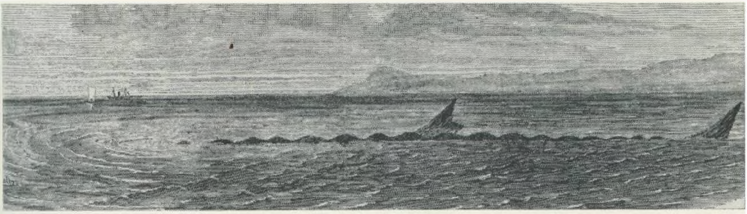
42. The *Sacramento* sea-serpent, 1877


CITY OF BALTIMORE

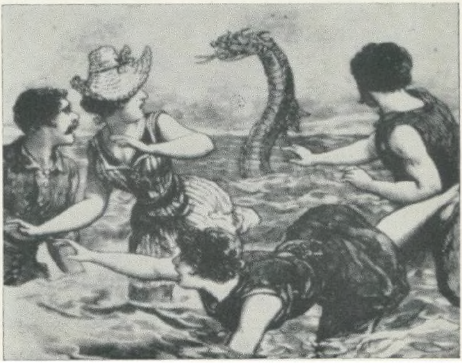
43. The *City of Baltimore* sea-serpent, 1879



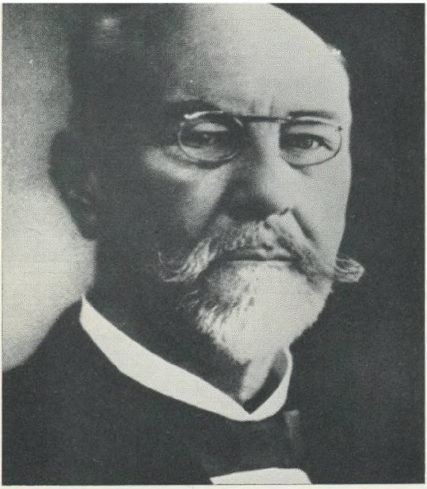
44. The *Philomel* sea-serpent, 1879



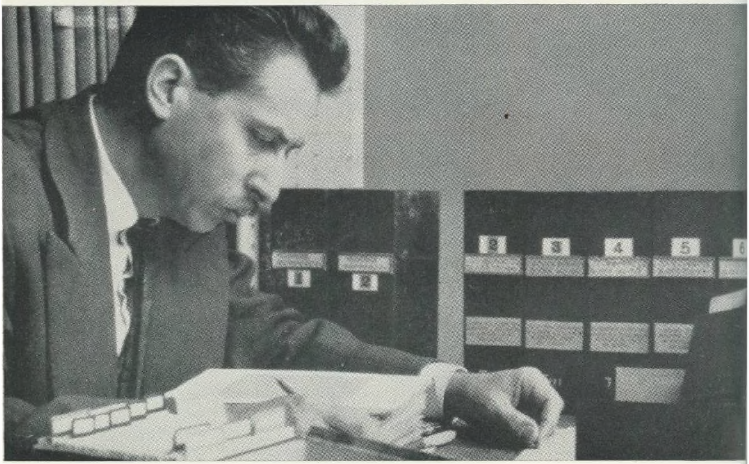
45. The *Kätie* sea-serpent, 1882



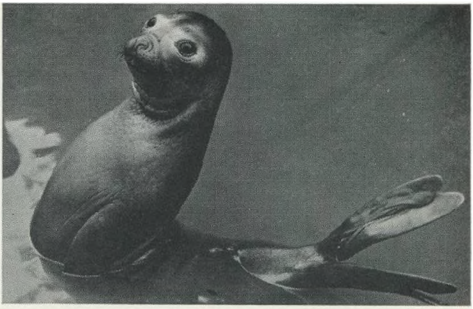
46. Excitement at
Pablo Beach, 1891



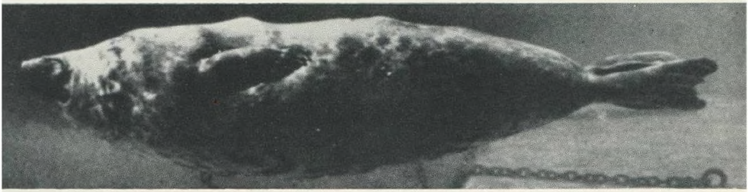
47. Dr. Antoon Cornelis Oudemans



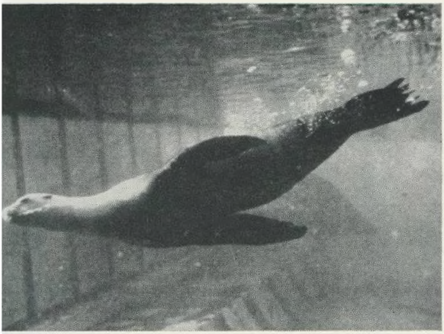
48. The author consulting Dr. Oudemans's unpublished archives



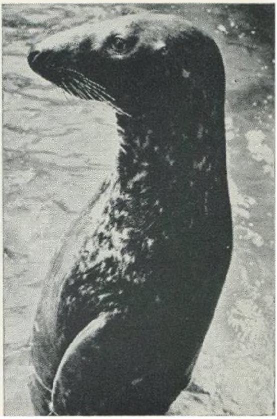
49. Seal showing a fish-tail



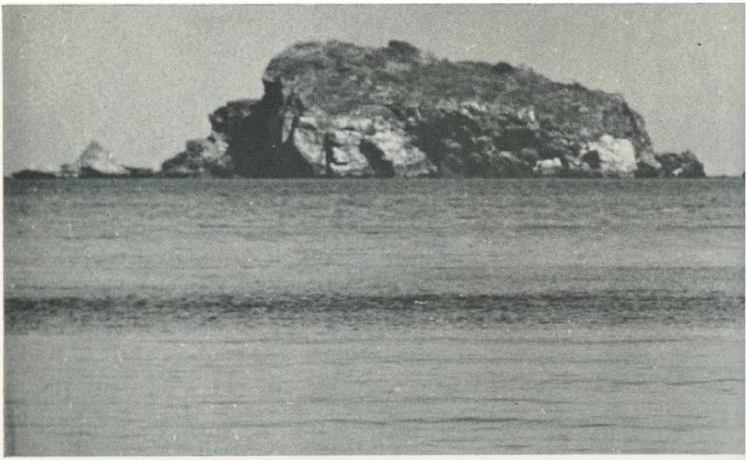
50. Seal showing rolls of fat produced by turbulence waves



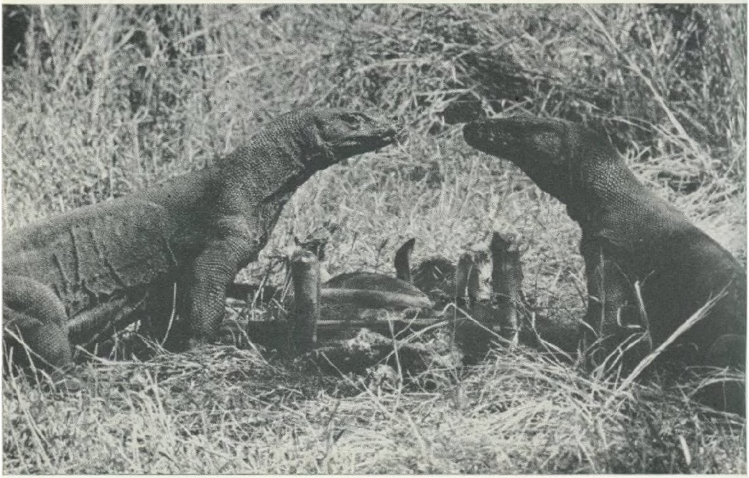
51. Seal tending to acquire a plesiosaur's outline



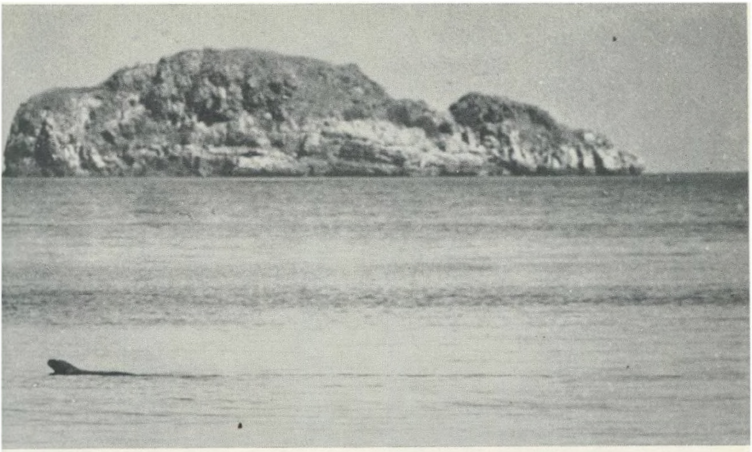
52. Seal in the sea-serpent's 'periscope' position

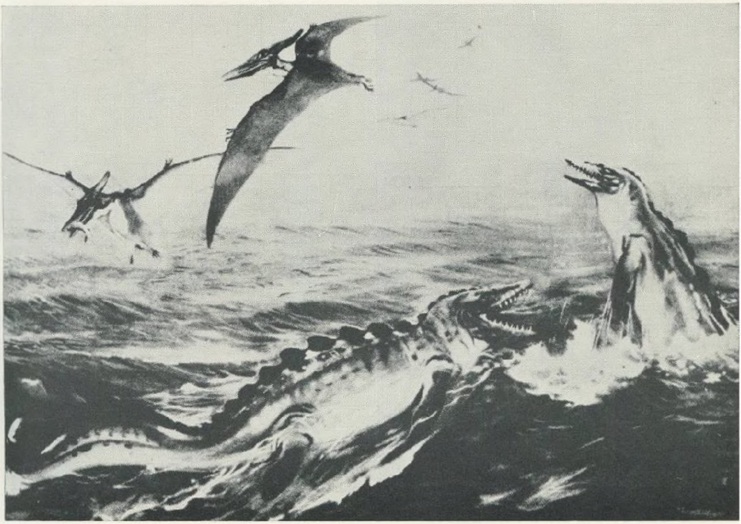


53. Komodo dragon swimming

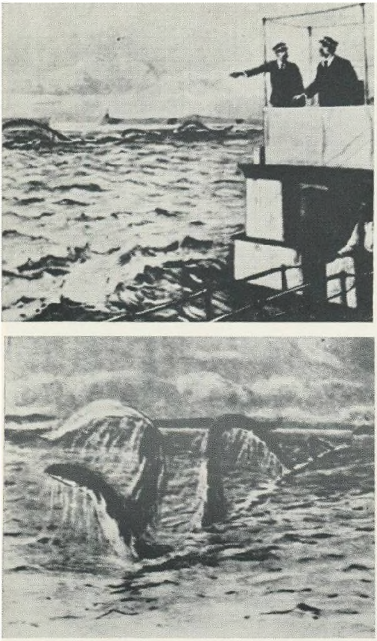


54. Komodo dragons on land

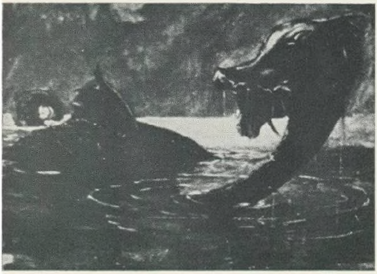




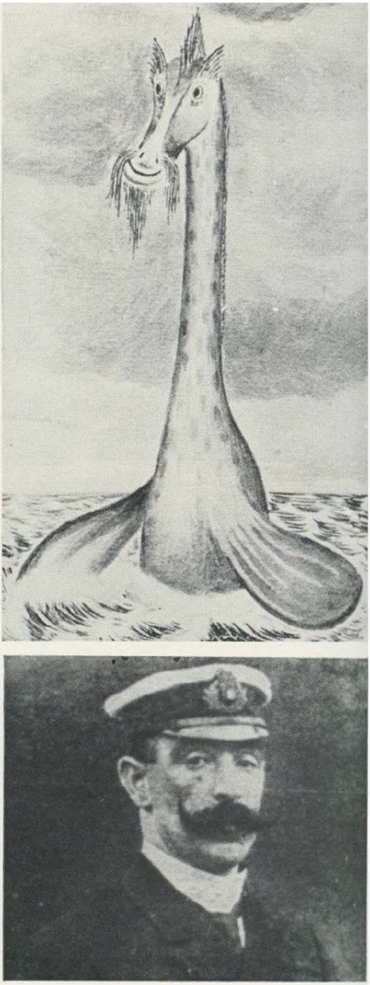
55. Mosasaurs by Zdeněk Burian



56. & 57. The *Nemesis* sea-serpent, 1900

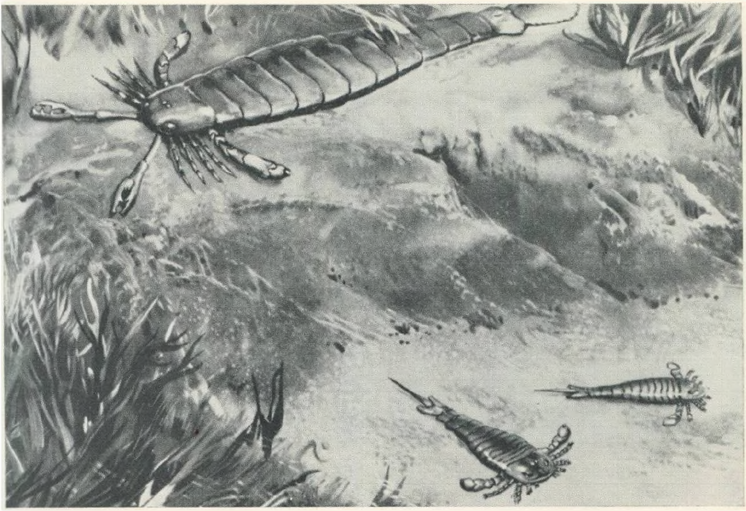


58. The *Tresco* sea-serpent, 1903

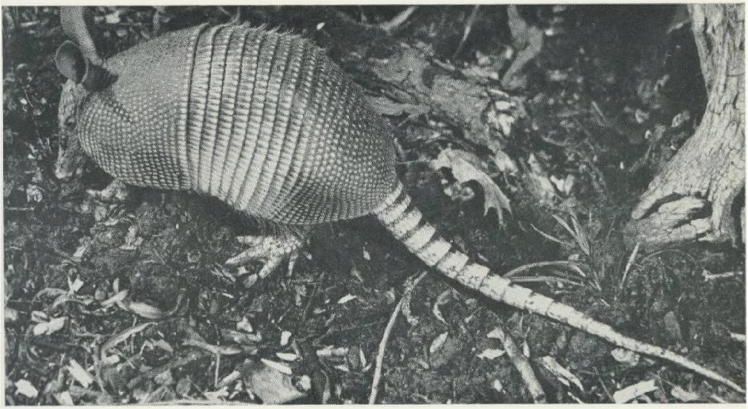


59. & 60. The *Corinthian* sea-serpent and the second officer, G. Batchelor

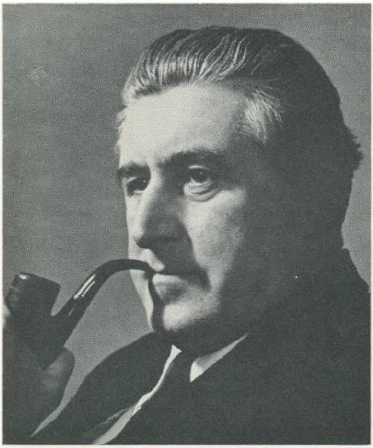
ANIMALS WITH RINGED ARMOUR



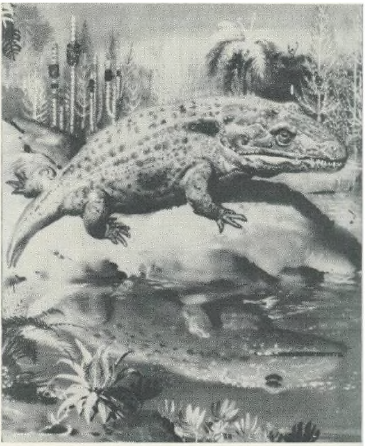
61. Eurypterida or sea scorpions by Zdeněk Burian



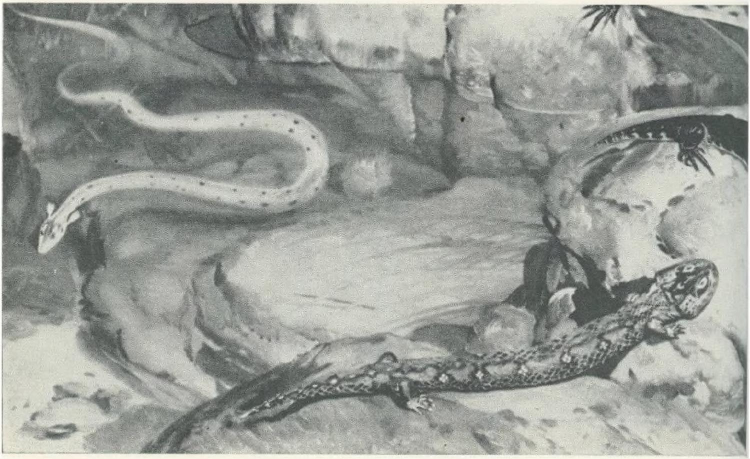
62. Nine-banded armadillo



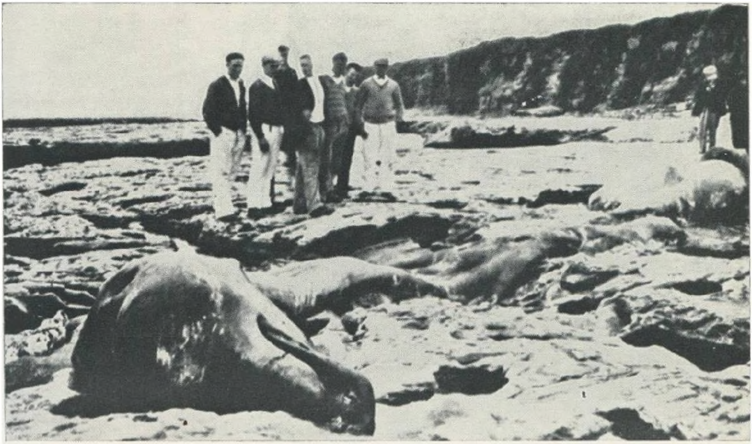
63. Commander R. T. Gould



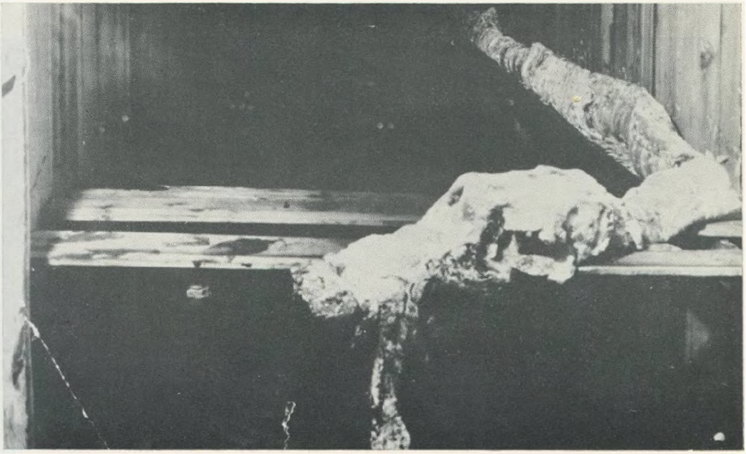
64. *Mastodonsaurus* by Zdeněk Burian



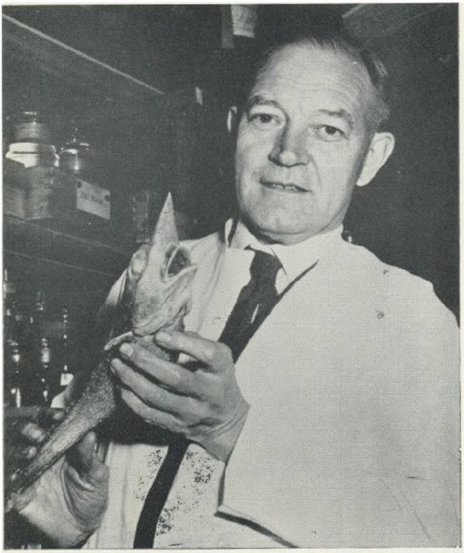
65. *Dolichosoma* by Zdeněk Burian



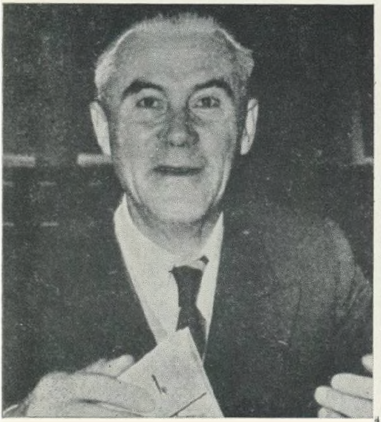
66. Santa Cruz carcase, 1925



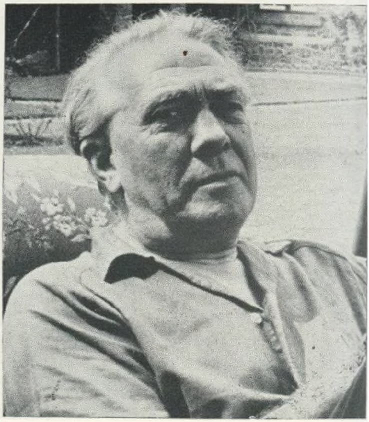
67 Effingham carcase, 1947



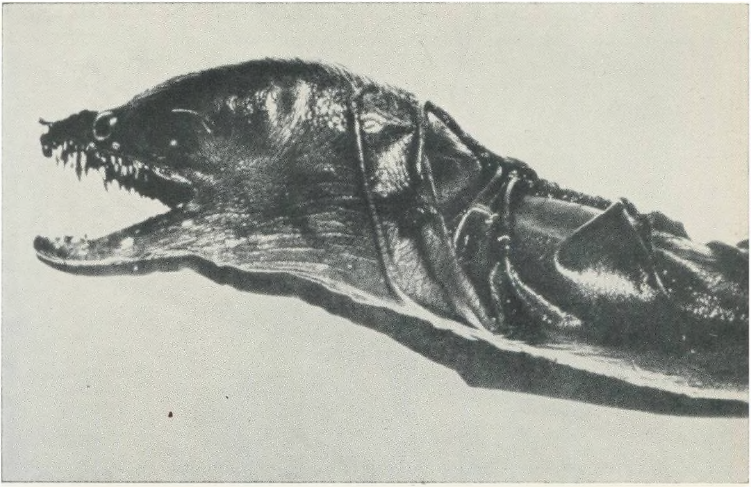
68. Anton Bruun



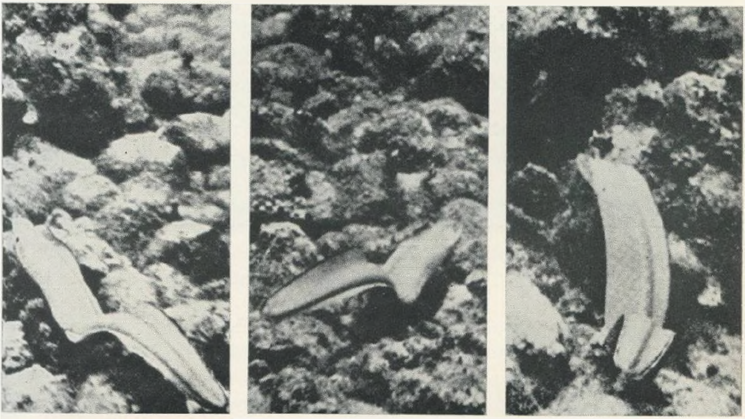
69. Léon Bertin



70. Maurice Burton



71. 10-foot moray *(Enchelynassa canina)*



72, 73, 74. Eel swimming on its side

Bernard Heuvelmans was born in Le Havre in 1916 of Belgian parents in exile. He received his doctorate in zoology from the University of Brussels and is an associate of the Royal Institute of Natural Science in Belgium, Fellow of the Zoological Society of London, and member of the International Institute of Sociology of Rome.

During World War II Dr. Heuvelmans was captured by the Germans, but managed to escape four times. He has at times made his living as a professional jazz singer. Presently he lives in Paris, but he travels extensively throughout the world taking photos of what remains of wildlife and trying to substantiate all local rumors and legends about animals still unknown to science.

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